July 1959

office management

the magazine for management executives

JUL 16 1959

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Automation is bridging gap between production line and office

in this issue

- Automation opens new horizons in first half of 1959
- What role for businessmen in the political picture?
- First report on NOMA conference in New Orleans

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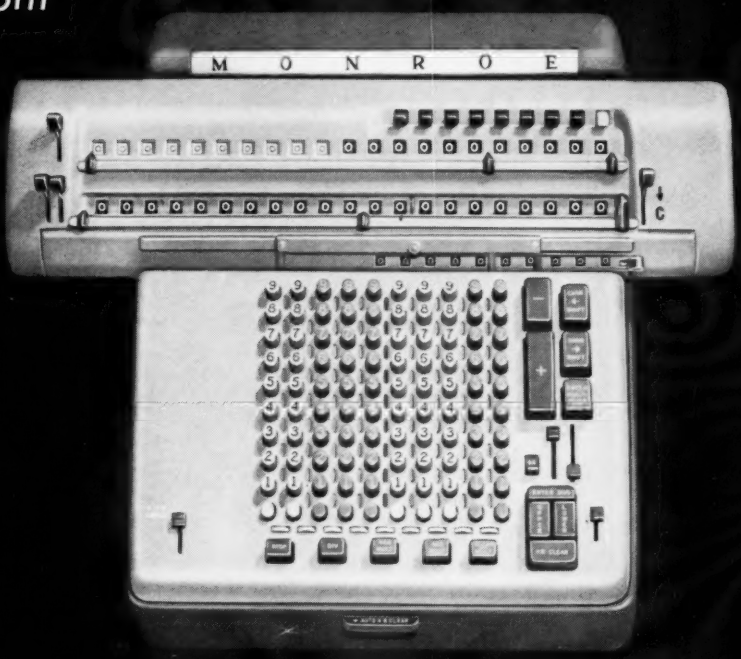

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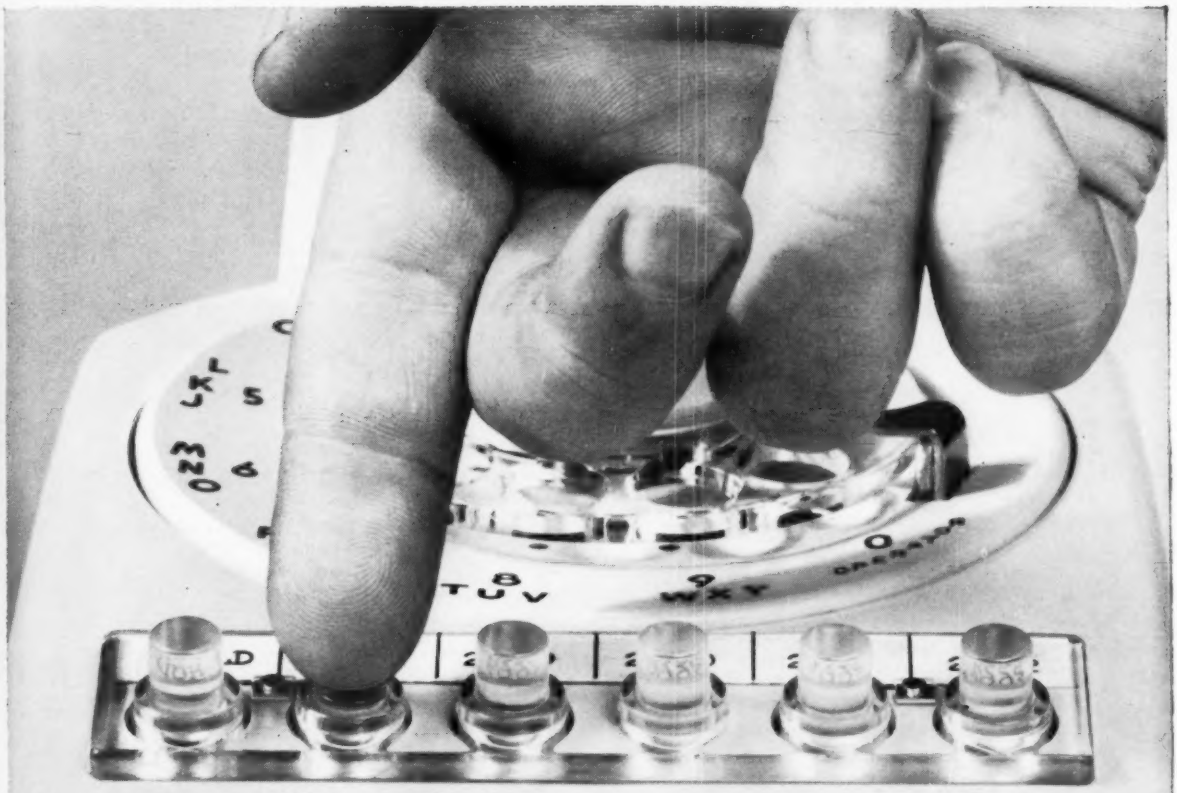

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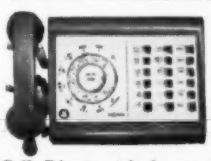

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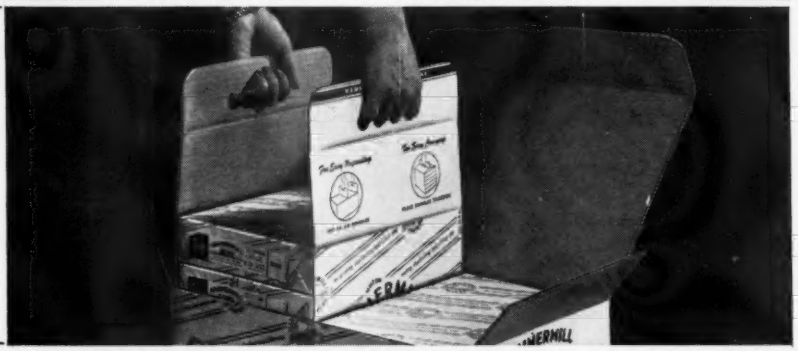

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in this issue:

Automation opens new horizons through new developments in first half of 1959 ..... **23**
by Robert M. Smith

Highly mechanized reproduction section proves vital link in automated system **26**

Are your systems meshed with your people? **28**
by Raymond Dreyfack

Office building and office layout planning **31**
by Kenneth H. Ripnen

Let's take the starch out of present white collar communications programs **33**
by Beverly BySura

Automation will completely change office growth, work patterns, NOMA hears **36**

What is the proper role for businessmen in the political picture? **37**

Automation in the office **38**

Tools of the office series **44**
This month: Equipment for integrated data processing
by Mary D. Lyons

Semi-annual Index, January-June, 1959 ..... **65**

What price politics? (*Editorial*) **82**

THE first half of 1959 has seen a rapid resurgence of interest in automation, as the article on page 23 points out. More, it has witnessed a whole series of provocative new ideas on the true nature and implications of automation, and its application to all phases of a business in the office, on the production line, and even in the executive suite.

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Business losses due to internal dishonesty rose in 1958

"American business firms lost more money during 1958 because of internal dishonesty than in any other period over the last quarter century," Norman Jaspan, president of Jaspan Associates, Inc., management engineering firm, told controllers at a recent meeting of the Controllers' Institute of America. "For an economy founded on the profit motive, one cannot help conclude that businessmen over the past six years have been running very fast just to be standing still," he remarked. He pointed out that although business continues to increase in volume, profit in percentage of sales has fallen. He noted that although the Gross National Product increased by $92.6 billion, corporate profits, before taxes, were similar to those recorded in 1952. Not only does this mean that business is standing still, he declared, but in view of the decrease in the purchasing power of the dollar, it is actually falling behind.

The seriousness of the problem of internal dishonesty has never been fully realized, Jaspan pointed out. One of the factors contributing to the obscurity of the problem is the inability of management to approach the situation realistically, he said. Too often a department is given freedom from managerial scrutiny simply because it is making money. However, he told the group, in over 50 percent of the jobs handled by the consulting firm, employee malpractices were found to exist where there had been no previous suspicion of dishonest practices.

Although a great many companies fail to set up proper controls and policies, dishonesty in most cases is a by-product of mismanagement, he said. Management pressures should not be forgotten as a significant cause of employee malpractices, he added, "Give an employee a task that seems impossible, an unrealistic work quota or a restricted budget and something will snap. He will cheat a little here and there until, before long, he is no longer afraid or embarrassed at his behavior. First he covers up to make his position secure. Then, confident, he 'takes' for his own personal gain because he feels he can get away with it." Mr. Jaspan also stated that experience has indicated the majority of employees are honest in the beginning, "But lax supervisory attitudes are frequently accepted by rank-and-file subordinates as

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a license to move from indifference to dishonesty," he added.

The belief that only the poorly paid, relatively unskilled worker is responsible for theft, also contributes to existing conditions, Jaspan said. Of $60,000,000 of losses uncovered by Jaspan Associates last year, more than 60 per cent were attributed to employees in managerial and executive positions, he reported.

If current practices of dishonesty in business could be eliminated, "the overall level of consumer prices probably could be reduced as much as 15 per cent," Jaspan ventured. Not only does management lose an "unparalleled opportunity" to increase profits, he said, "It also stands indicted for failing to preserve important moral values in business."

These five basic measures were recommended by Mr. Jaspan as safeguards against losses due to internal dishonesty:

1) Set realistic standards of performance.

2) Maintain good communications.

3) Follow through on employee performance.

4) Maintain uniform policies.

5) Utilize important psychological safeguards.

IBM Corp. reorganizes divisional structure

The International Business Machines Corporation has recently announced a major reorganization involving the creation of four divisions, and the arrangement of these with existing divisions into two principal corporate groups. Mr. Thomas J. Watson, Jr. president of IBM, stated that the step in decentralizing company operations will produce an organizational structure capable of handling expected corporation expansion within the next few years. "At the same time, it will bring about shortened lines of communications and faster management decisions," Mr. Watson added.

A significant step in the reorganization was the breakdown of the Data Processing Division into three separate divisions. The Data Processing Division was concerned with the selling and manufacture of punched card and electronic data processing systems (EDP). The new Data Processing Division will lease or sell, and service, IBM punched card accounting machines and EDP systems for all U. S. markets except the Federal govern-

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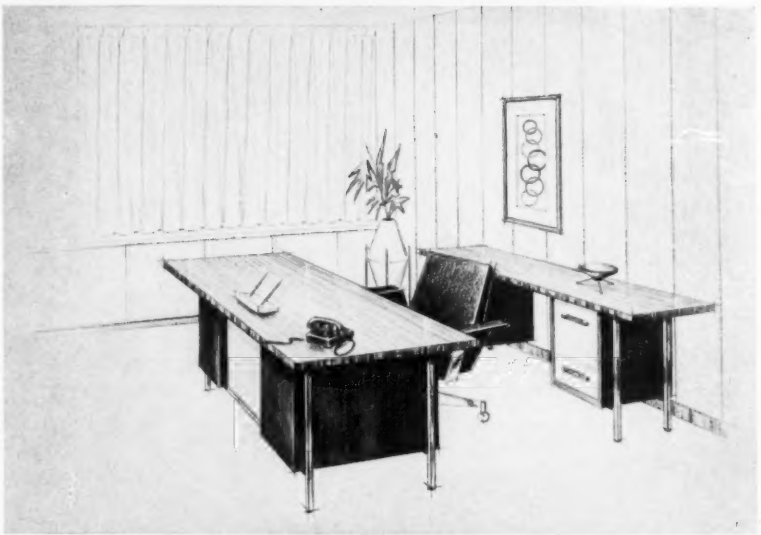

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ment. The new Data Systems Division will develop and manufacture large scale EDP systems, while the General Products Division will handle the development and manufacture of intermediate and small computing systems, and punched card accounting machines.

A second significant organizational move was the merger of the Military Products Division with the IBM Washington Federal Office to form a new Federal Systems Division. The Federal Systems Division, whose responsibility it is to serve the Federal government and military, will continue to market commercial data processing systems to government agencies. It will also engineer, produce, and market special data processing systems, ground-base and air-borne, for the military.

One of the major corporate groups will be headed by vice president T. V. Learson, and will include: the Data Systems Division, and the Advanced Systems Development Division, whose existence was announced in April, 1959.

McLain B. Smith, former vice president and general manager of the Data Processing Division, was named vice president and group executive for the following divisions: the Data Processing Division; the Federal Systems Division; the Supplies Division, formed in 1956; and the Service Bureau Corporation, a wholly-owned, independently-operated subsidiary of IBM, formed in 1957.

Present school training attacked by educator as inadequate

In a recent address before the Personnel and Industrial Relations Association Conference in Los Angeles, Dr. George C. S. Benson, president of Claremont Men's College, declared that the American educational system has sacrificed quality during its expansion in the last half century. In comparison, the educator stated, "the graduate of the English public schools, the French lycee, or the German gymnasia is as much as two years in actual learning ahead of the graduate of the American high school." In some fields, such as medicine and engineering, the American technician is among the best in the world, he said. "Our educational system seems to fall down only on the problems of fundamental thinking—a curious defect in a country whose educational system leads all others in expense and elaborateness," he added.

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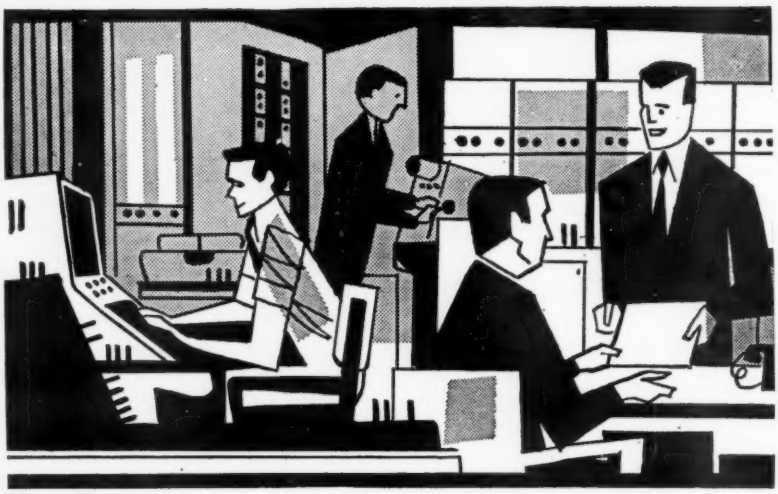

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Since the appearance of the first discussion on the subject of Automation in the Office in the August issue of 1952, OFFICE MANAGEMENT has published articles on Automation on a regular basis to keep the office abreast of everything new on this modern technique. Here are some typical ones:

JANUARY, 1958
How to prepare an office for a computer installation
FEBRUARY, 1958
Basic steps in programming a computer for a single operation
by Ben Conway
JUNE, 1958
Why small companies may need automation even more than larger concerns
by Robert M. Smith
JULY 1958
Why small companies need automation even more than larger concerns
Part 2 Equipment for "Automation in the Office"
AUGUST 1958
Why small companies need automation even more than larger concerns. (Conclusion)
SEPTEMBER 1958
The role of automation in freeing managers for more creative work.
OCTOBER 1958
Why new computer coding techniques may accelerate pace of office automation — by Robert M. Smith
JANUARY 1959 (Yearbook Issue)
Effects of recession still felt in current trends in automation
by Robert M. Smith

WHAT IS AUTOMATION IN THE OFFICE?

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great deal of the blame for the lag in sound educational practices must fall upon the universities, the administrators who are still hampered by the ideas of "progressive education," and the state laws which regulate the recruitment of teachers. However, Dr. Benson pointed out, "The real ogre in our educational picture is, I think, American society as a whole. We have not emphasized educational values as we should. We have put too much emphasis on securing the latest and shiniest cars, the newest and most convenient gadgets, the beefiest professional athletes, the largest and thickest steaks, or the best dressed and most attractive women. But we have not been willing to match our material development with a corresponding intellectual development." In his address Dr. Benson remarked that the lack of an intellectual standard is even reflected in our social life. "I think of those terrible hour-long 'receptions' before public dinners in which you say hello to everybody, and nothing that is worth saying to anybody. We have become masters of 'small talk' in every sense of that phrase," he added.

In Short—

Naval office installs Burroughs unit for control of ordnance supplies

The U. S. Naval Ordnance Supply Office at Mechanicsburg, Pa., recently announced the installation of a Burroughs Automatic Data Processing System (ADPS). Capt. R. L. Myers, commanding officer of the Ordnance Supply Office, indicated that the system, centered around the Burroughs 220 computer, is ready to assume its position in the control of ordnance supplies to depots and the fleet. According to Capt. Myers the ADPS will be used to control three major operations: technical records; inventory control; and shipboard allowance lists. The system will also be used in the areas of guided missile inventory, provisioning, price changes, and transaction item reporting. The complement of ADPS hardware includes: a data processor with 5,000 word magnetic core memory; seven single-reel magnetic tape units; a complete paper tape input-output sub-system; and a Cardatron sub-system for controlling three punched card input-output machines.

(*To page* 15)

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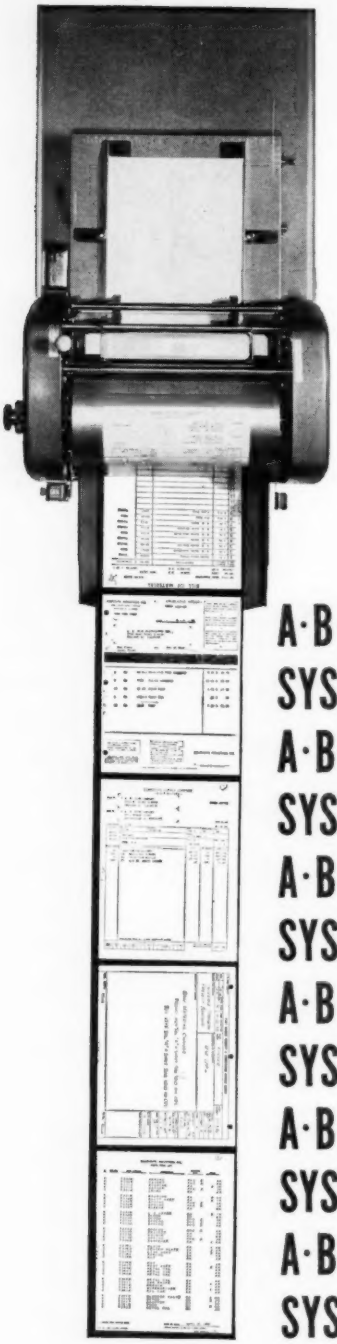

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In Short—
(*From page* 12)

Modern Business Forms Mfg. Co. changes company name

William H. Bedinghaus, Jr., president of Modern Business Forms Manufacturing Co., 333 W. Court St., Cincinnati, Ohio, recently announced a change in the firm's name to Bedinghaus Business Forms Co. The company, lithographers of custom and stock forms for business offices, institutions, plants, etc., does not anticipate any change in policy or personnel, Mr. Bedinghaus explained.

Franklin Life, first private Univac user, buys second unit

Charles E. Becker, president of the Franklin Life Insurance Co., Springfield, Ill., has recently announced the purchase of a second Univac electronic accounting system from Remington Rand Division of Sperry Rand Corporation. Franklin Life became the first business organization to contract for the purchase of a Univac in June, 1952. All Univac EDP installations before that time were owned by the government.

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Books and Pamphlets

AUTOMATION: ITS IMPACT ON BUSINESS AND LABOR, by John Diebold. National Planning Association, 1606 New Hampshire Ave., N.W., Washington, D. C. Pamphlet No. 106. 64 pages. $1.00 "The Dilemma of Automation" is the title Mr. Diebold has given the first chapter of his report. This "Dilemma," according to Mr. Diebold, has resulted from carelessly formulated opinion concerning the effect automation will have on the future economic and social stability of our country. The pessimistic viewpoint, the author states, is epitomized by the accusation that automation will produce an unemployment situation comparable to the employment disaster resulting from the 1929 depression, while on the other hand, optimists feel that automation represents the dawn of a "golden tomorrow," or that it will soon be called the "second industrial revolution."

This confusion over the exact impact automation will have on society results, in part, from the lack of stress put upon the conceptual view of automation, Mr. Diebold states. There is an overbalance of interest, a fascination with the machinery of automation, the author points out. When we hear the word "automation" we tend to think only of electronic computers, or numerical tool controls, he says. However, the report states, if the full social and economic implications are to be understood, it is necessary to comprehend that automation does not simply mean "hardware."

Pointing again to the automation "dilemma" Mr. Diebold states that, "Until the facts are known, unfounded prophecies and unsubstantiated courses of action will continue to dominate the picture given to the public. The results can be disastrous to our nation and to our way of life, and it becomes more and more vital each day to find out the truth." The author states that, "By now automation has gone far enough so that it is possible to find out something about its effects, but not so far that it is too late to apply some feedback to the economy and alter these effects if we should find we need to."

The report continues with a description of some of the developments in automation, and from these develop-

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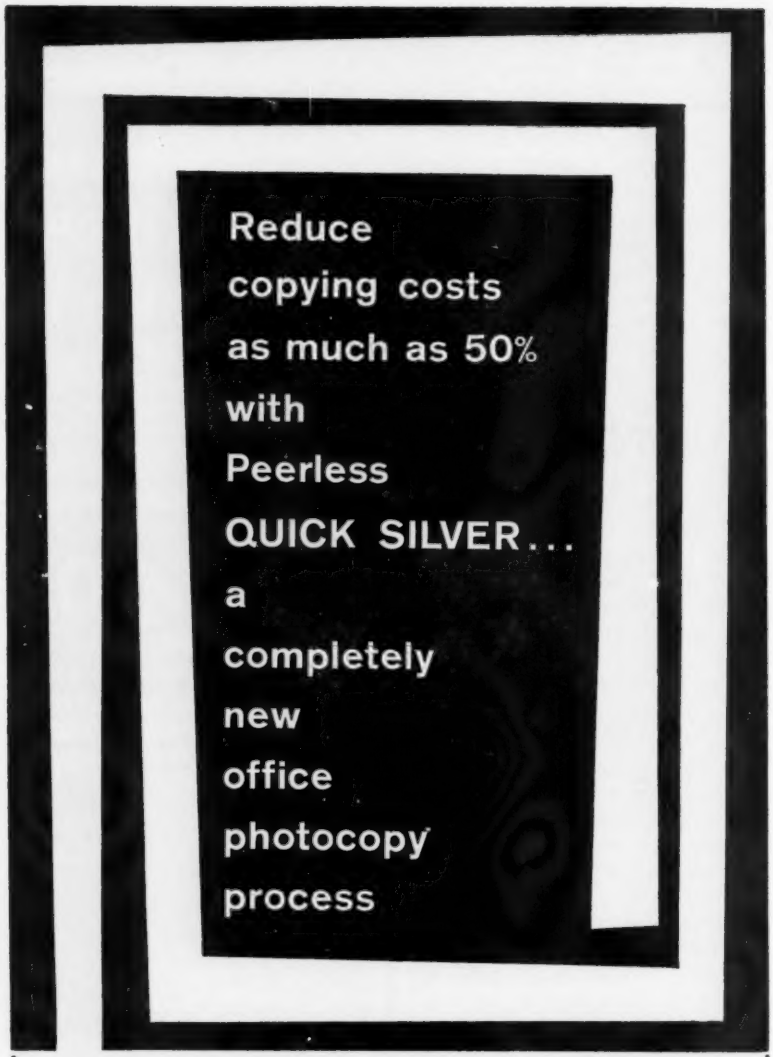

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ments a framework is constructed on which Mr. Diebold feels a thorough study of automation should be based. Such a study, he says, would provide the facts needed as a guide to intelligent planning, and would stifle the "irrational fears that have been raised by those wishing to use the specter of a machine-dominated society to further certain old and well-established movements." In order to indicate how desperately such a study is needed, the author presents some of the most prevalent arguments regarding the economic and social consequences of automation.

The report treats such important questions as the relationship of automation to management, employment, industry, and education.

MANAGEMENT FOR THE SMALLER COMPANY. American Management Association, 1515 Broadway, New York 36. 402 pages. $9.00/AMA members $6.00. This book was created for the specific use of companies employing less than 1,000 people. Thirty-five executives and experts apply sound principles of management, accumulated through personal experience, to the significant problems facing managers of smaller companies. Each authority presents a chapter dealing with the problems within his special field. Among the subjects presented are automation, marketing programs, pricing, and inventory control. One section of the book discusses how a strong reserve of managerial talent can be retained within the small company. Another section treats the resources to be found outside of the company; assistance from the government; management consultants, etc. The book also gives checkpoints by which the performance of any given company can be compared with the achievements of others.

MANAGEMENT'S MISSION IN A NEW SOCIETY. Edited by Dan H. Fenn, Jr. McGraw-Hill Book Co. Inc., 330 W. 42nd St., New York 36. 345 pages. $6.00. In this new volume, prominent leaders in business and government contribute definitive appraisals of the present business estate. Business, it is said, is succeeding as a producer, while losing its prominence as an active, contributive force, especially in those areas which affect its well-being.

(*To page* 21)

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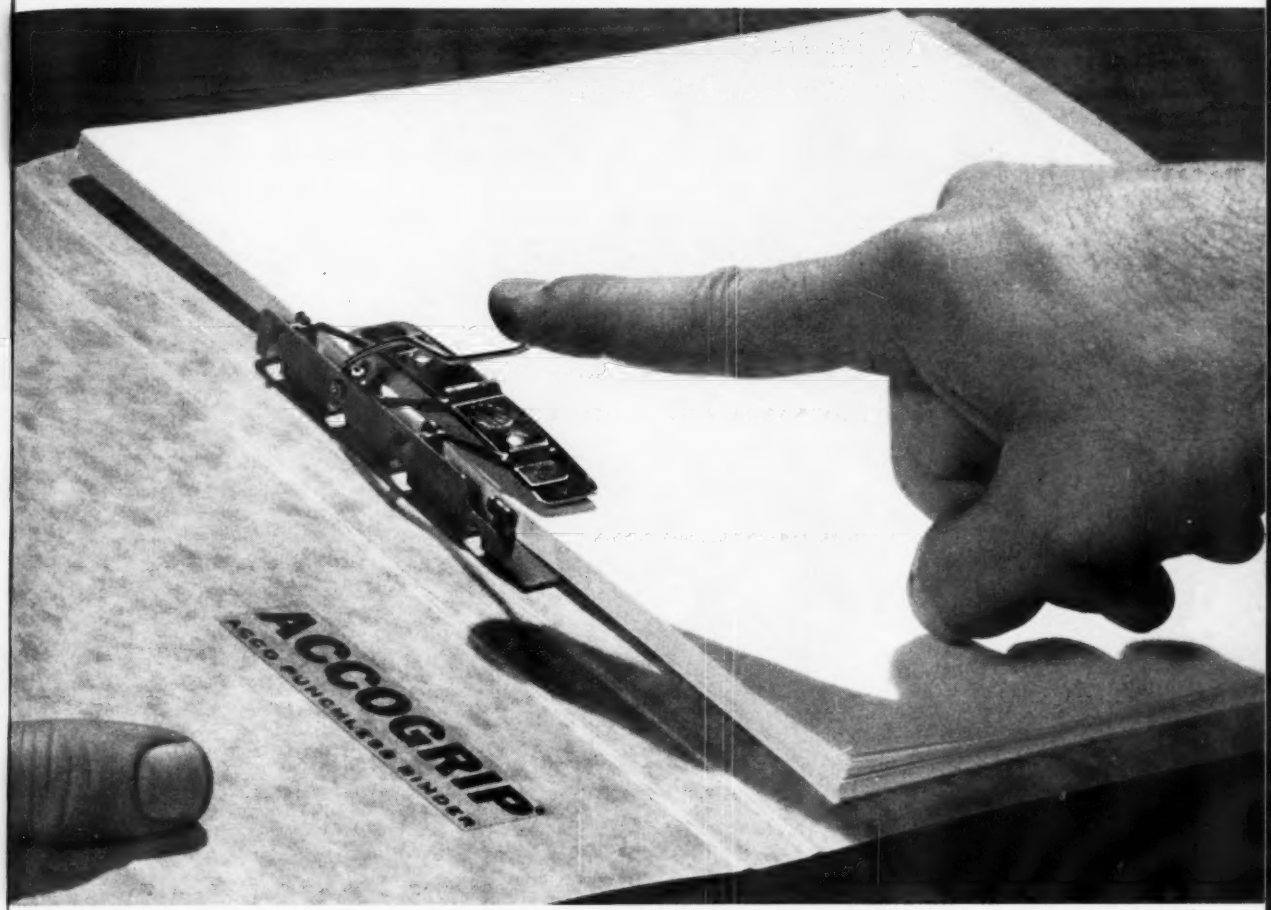

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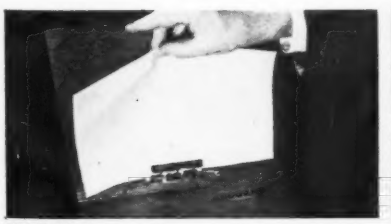

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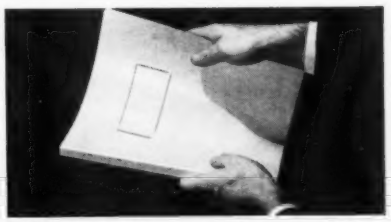

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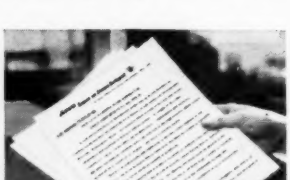

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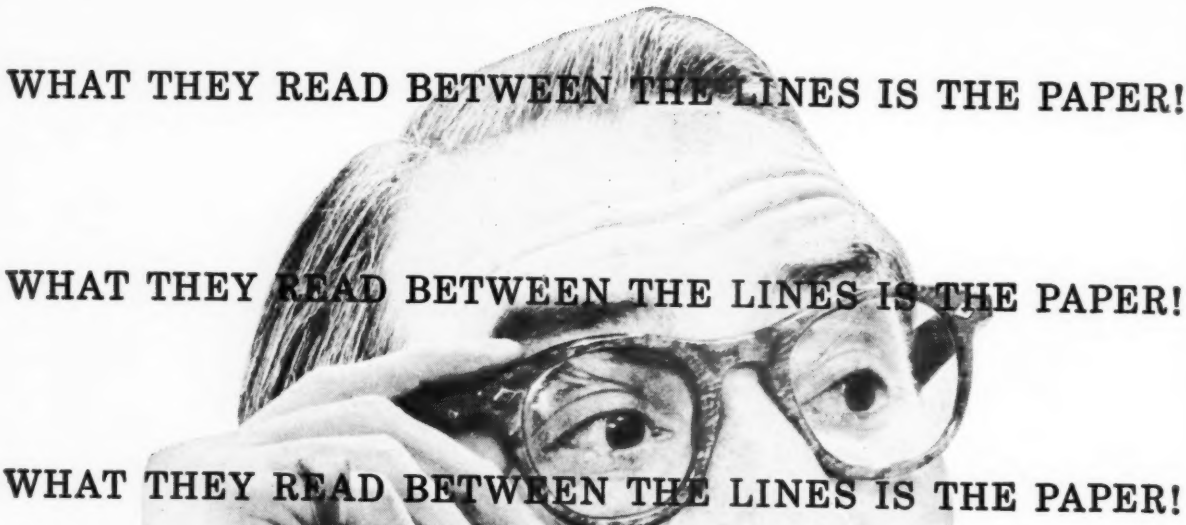

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Books and Pamphlets

(*From page* 16)

The messages given in the volume are intended to stimulate the individual businessman; to make him rethink practices and objectives in order to help produce a more favorable business climate in a new and changing society. Such vital questions as, "In what ways is business losing its influence to politicians, intellectuals, and labor and how are individual companies affected?" are presented in the volume. Illuminating answers to the various questions are put forth by such men as John Burns, president of RCA; Arnold Toynbee; and Vice President Nixon.

Coming Events

Chicago International Trade Fair. Chicago, Ill., July 3-18.
Sponsor: Chicago Association of Commerce and Industry.
Place: Navy Pier Exhibition Hall.

AMA Workshop: Organization and Administration of the Controllers Job. Hamilton, N. Y., July 13-17.
Sponsor: American Management Association.
Place: Campus, Colgate University.

AMA Seminar: Management, Men & Organization. Hamilton, N. Y., August 10-14.
Sponsor: American Management Association.
Place: Campus, Colgate University.

NOMA Business Machine and Office Equipment Exhibition. Charleston, West Virginia, September 10-12.
Sponsor: National Office Management Association.
Place: Charleston Civic Center.

OEME Inaugural Exhibit. Washington, D. C. September 23-25.
Sponsor: Office Equipment Manufacturers Exhibits, Inc.
Place: National Guard Armory.

NSOEA 1959 Convention & Exhibit. Chicago, Ill., September 26-30.
Sponsor: National Stationery and Office Equipment Association.
Place: Conrad Hilton Hotel.

with the EDITORS

The current trend toward psychiatric screening of potential executives in many of the nation's larger corporations might well be reviewed in the light of a recent report, "The Ineffective Soldier," published by the Columbia University Press. This three-volume study analyzes the men who were rejected for military service in World War II because of mental or emotional instability, and those who had to be separated from the service after induction because of inability to adjust to military life.

Of the five and a quarter-million men rejected for the draft, one-third were barred from service for reasons of mental or emotional inadequacy. Three-quarters of a million had to be separated from the service after induction because of mental or emotional failure.

The result of a special study launched by President Eisenhower when he headed Columbia, the massive report presents some interesting conclusions. First of all, the number of men who had to be separated from service after induction because of failure to adjust to the admittedly rough standards of the Army was high enough to indicate that the psychiatric screening methods used by the Army induction centers were not as effective as they might have been. In fact, the report concludes, no mass screening procedure seems to be very effective except in weeding out the most obvious psychotics or incompetents. The best test is still to try the man who can pass a "coarse screening" (which is what the military is tending to adopt) in an actual situation, and then weed him out or reassign him to some other responsibility if he proves not up to par.

No one would argue that the corporate existence resembles to any great degree the existence of an enlisted soldier who has been drafted into a wartime army. But the fact that the relatively thorough psychiatric screening given by the Army failed to reveal such a high percentage of men who could not adapt to military life itself (only one-quarter of the men who had to be separated after induction were ever under combat conditions; the other three-quarters never even got abroad) certainly would seem to cast doubts on psychiatric interviews, much less the ubiquitous psychological test, as a reliable guide in personnel selection. The additional fact that a *Fortune* study a few years ago indicated that a large number of company presidents would be ineligible for present junior executive positions within their companies because the company tests would indicate "undesirable" qualities, would also seem to call for a critical reappraisal of the relative value of either psychological tests, or one-shot psychiatric interviews in executive selection procedures.

The three volumes of "The Ineffective Soldier: Lessons for Management and the Nation" are available from the Columbia University Press, at $6 a volume. They are highly recommended to all who are concerned with either the selection or management of large groups of personnel.

Robert M Smith
Editor

ISA 14th Annual Instrument-Automation Conference and Exhibit. Chicago, September 21-25.
Sponsor: Instrument Society of America.
Place: International Amphitheater.

LOMA 1959 Annual Conference. Chicago, September 28-30.
Sponsor: Life Office Management Association.
Place: Edgewater Beach Hotel.

Correction

The Ruby Philite Corporation was inadvertently omitted from the listing in the May issue of *Office Management* of those companies which supplied overhead lighting equipment for the Seagram Building in New York. Credits should have read—OVERHEAD LIGHTING EQUIPMENT: Ruby Philite Corp.; Lightolier, Inc.; Gotham Lighting Corp.

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YES NO NO NO NO
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Clears all stops instantly without moving carriage.
YES NO NO NO NO
ERROR CONTROL
Simplifies correction of errors and line justification.
YES NO NO NO NO
BOTTOM MARGIN INDICATOR
Page Gage accurately indicates bottom margin.
YES NO NO YES NO
88 CHARACTER KEYBOARD
Standard at no extra charge.
YES NO YES NO YES
KEYBOARD SLOPE
Key top slanted to fit natural movements of fingers.
YES NO NO NO NO
ROLL-FREE ACTION
Releases typebar cams with no "scuffing" action.
YES NO YES NO NO
SAFETY COVER
Motor shuts off when cover is raised to change ribbon.
YES NO NO YES YES
CUSHIONED TOUCH
Eliminates jar to sensitive finger tips at end of each stroke.
YES NO NO NO NO
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Automation opens new horizons through new developments in first half of 1959

Returning prosperity, wave of technological and systems improvements in data processing equipment and techniques, lead to sharp revival of business interest in automation —

by Robert M. Smith

ELECTRONIC COMPUTERS achieved a new dimension last month — and a new reality on the American scene—with the presentation of a provocative, if non-technical, major television drama in which the central theme involved a computer's ability to reproduce the thought patterns of a brilliant intellectual.

The electronic data processor has moved from the field of the specialist — and the satirist — into the realm of the general public. Whatever the eventual results, the definite slowdown in the trend toward automation — as represented by new electronic developments — which was so evident in 1958, has ended. The pace of new developments today is swifter than ever before.

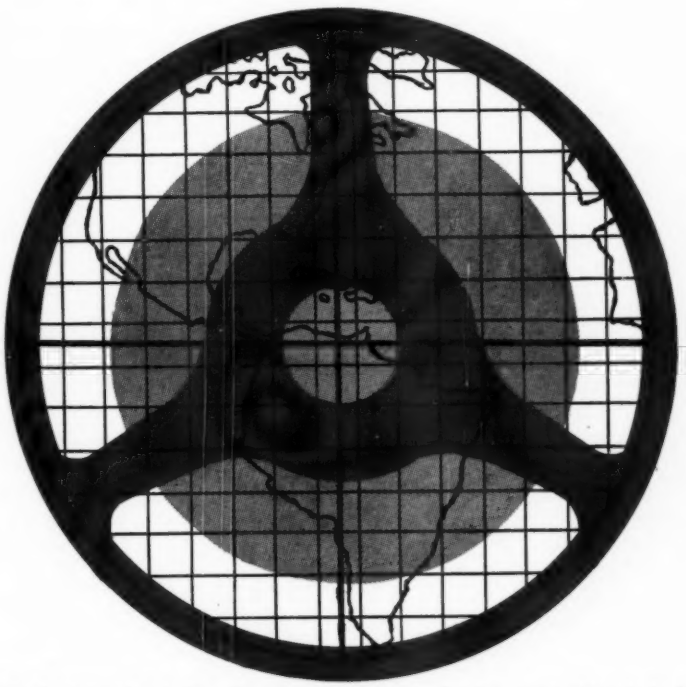
The television drama indicates the change, but it represents only the surface of the change that has taken place, the fact that popular knowledge of the computer has grown so wide that a serious play could be presented in which the potentialities of the electronic data processor were part of the theme.

There have been other far more tangible, if less colorful, signals to show that the impact of electronic control and processing devices, with all the vast changes that they may bring, is truly beginning to be felt across the country, at all levels of business.

Item: Last month, the front page of *The New York Times* Sunday business section on June 14 was dominated by "automation." Three major stories dealt with, respectively, the development of new control devices for computers; the introduction of completely automated procedures for General Electric's steam turbine-generator plant at Schenectady, N. Y.; and the plans of a major French computer manufacturer, already the world's third largest producer of data processors, to invade the United States market in force under its own name next year.

Item: A prediction by Claude Shannon, of the Massachusetts Institute of Technology, that computers will move so fast into every phase of our life that simplified versions of today's machines will be "making routine decisions in the home by the end of the next decade."

Item: International Business Machines, the nation's largest manufacturer of electronic data processors, announced last month its acceptance of the automatic programming principle, under which a computer can be given its directions in simple English by non-technical personnel. IBM revealed that it is working on development of COMTRAN (Commercial



Impact of automation is literally worldwide; rise in foreign competition is in large part due to improved plant procedure abroad, and foreign computers will be launched on United States market next year.

Translator), a magnetic tape reel device which will make possible simple English operating instructions, rather than elaborately coded programs in machine language, for its entire range of large, general purpose computers.

Remington Rand already has such a system in the Flo-Matic, and its new Univac solid state computer (see "Automation in the Office," page 38) has been designed to employ automatic programming almost exclusively. Minneapolis-Honeywell, a new but potent entrant in the electronic data processing field, is working on translating devices that will transcribe simple English directions into machine language for either scientific or business purposes, and expects to have its commercial translation system developed by next fall. Burroughs is another major producer with a translator system in development.

Item: The whole trend toward automatic programming devices for computers received tremendous impetus last month at Paris when experts approved an International Algebraic Language for computers, a common language form for data processors which will enable scientists to use the same form of basic operating instructions (in English) for all makes of computers.

Item: This year, for the first time it was seriously suggested by experts in the field that electronic data processing facilities share many of the characteristics of public utilities, and that perhaps the most logical development of the future would be direct lines from small companies, not needing their own computers, to central, regulated facilities, which would process their information and solve their problems for them on a regular, time-charge basis.

Item: The possibility of this development becoming a standard in the near future was emphasized by a simple suggestion made at last year's fall conference of the Systems and Procedures Association of America, in Buffalo, N. Y. Why not, it was asked, put a simple timing control on computers, so that a machine with a variety of problems to solve or applications to process, could automatically cease work on a problem on which there was no set time limit to perform some routine repetitive operation which had to be performed at a given time? Once the periodic routine was completed, the computer could return to continue processing the stored problem at the point where it had left it.

The two suggestions, together, lead to a logical future conclusion. With such timing devices, and electronic data processing facilities on a public utility basis, companies could, with relatively simple transmission devices, gain all the advantages of their own electronic data processing facilities without ever having a data processor in their possession. They would simply "buy" processing power at a central facility, just as householders now "buy" power whenever they turn on a radio or television set. With automatic control devices on central computers, they could then presumably buy power on priority or delay rates, so that necessary routine, repetitive operations would be carried out on a strict time schedule; one-time operations, on which there was no time pressure, would be carried by the central facilities, whenever there was idle machine time.

Effects on personnel

Item: The sociological implications of automatic control and processing devices are daily attracting more concern. While the arguments *against* automation causing a high degree of technological unemployment are still impressive (it has been estimated that electronics itself will be the country's largest industry within the next ten years) there is far less certainty as to what its effect will be on office personnel levels. A speaker at the May conference of the National Office Management Association, in New Orleans, R. C. Ludlow, treasurer, R.C.A. Victor Co., Ltd., Montreal, predicted that the office organization of the future will probably consist of three distinct planes of workers: machine tenders; programmers, analysts, and research personnel; and decision-makers. The possibility of rigid stratification of workers in some such pattern cannot be discounted.

Item: Computer models have been developed which can process a number of problems at once, and other major manufacturers beside Minneapolis Honeywell and France's Compagnie de la Bull, which have developed the first models, are planning to build such computers. Since one of the great handicaps suffered by computers in the past has been the comparative slowness of input and output equipment compared to the internal processing speed of the computer, this represents a major breakthrough in computer usage. With the ability to process several different problems simultaneously, the central processing facilities can be connected to a variety of input and output units, serving different needs, and different departments within a company, and process incoming information from all of them at the same time.

This listing covers just the main highlights of the developments in electronic data processing that have taken place in the past several months — but it does indicate the fact that technical and systems improvements on the one hand, and returning business prosperity on the other, have revived the widespread business interest in the electronic data processor, which definitely seemed to be flagging last year and in 1957.

But there is no doubt the increasing pace of automation — both in office and factory — is creating problems that must be solved. In the present expanding economy, problems of unemployment are relatively slight, but the lag in employment during the first months after the turn of the recession indicated that automation has made employment less responsive to a business upturn than has been true in the past. In other words, new, more efficient ways of producing goods — or gaining results in data processing — could mean a relative lessening of the number of workers needed, unless the work load itself keeps increasing. That means that expansion of gross national product must keep pacing the advance of labor saving devices, if fairly severe and prolonged technological unemployment is not to hurt at least some workers.

This seems to ignore the standard policy followed by most companies that have so far introduced automated control and processing equipment. Most of these concerns — at least as far as office workers are concerned — have been scrupulous in transferring displaced workers to other jobs in the company. But this alone is not in reality a complete solution, for as was

pointed out by Professor Walter S. Buckingham, of the Georgia Institute of Technology, in hearings before the Congressional subcommittee investigating the effects of automation:

"The worker displaced is not fired; he is the one who is not hired."

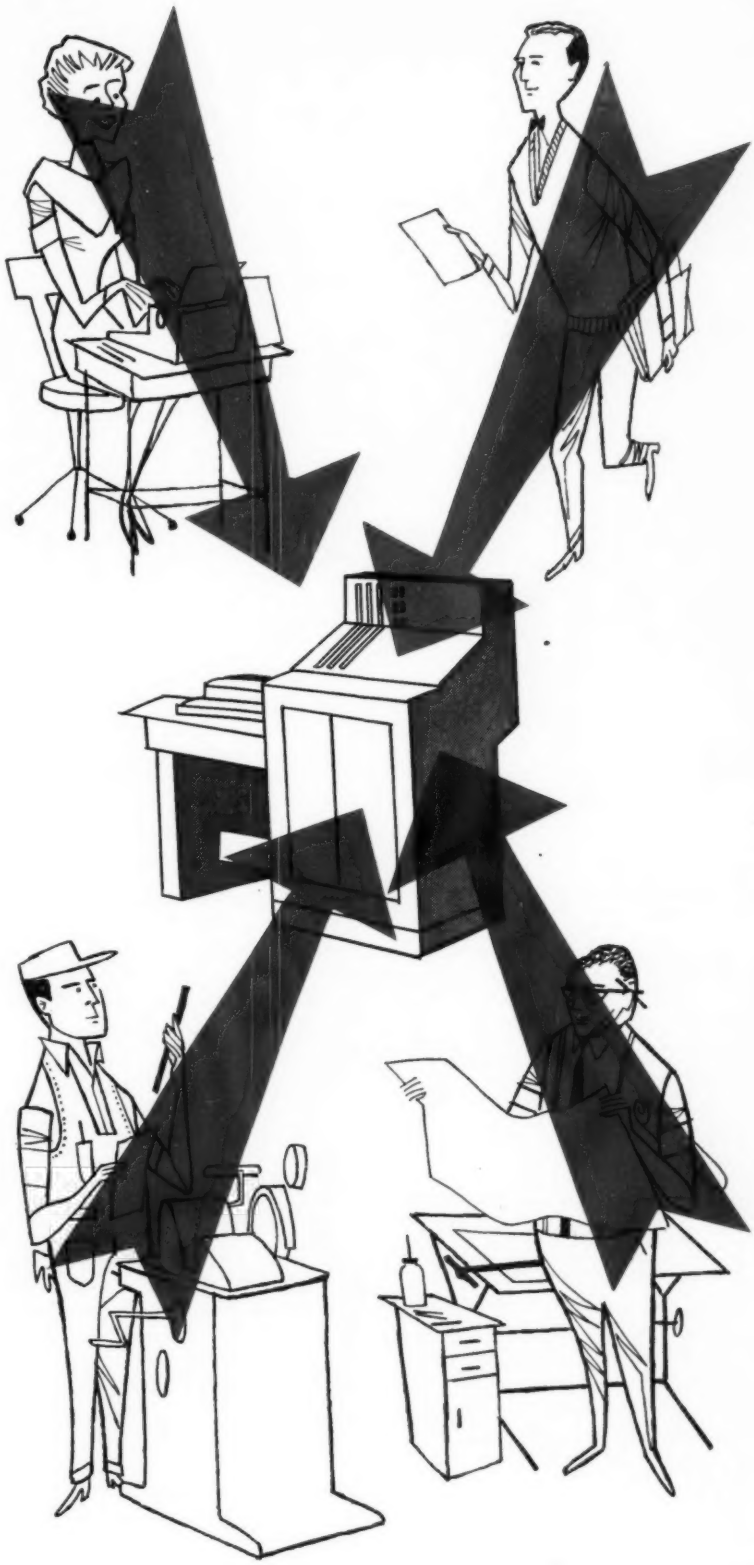
In other words, there is a strong feeling among many responsible economists that the fact that automation, at least in the office, has apparently caused no mass layoffs is not in itself too indicative; the equally true fact is that because of automation, companies have needed to hire less additional workers than would otherwise have been needed to keep up with an expanding work load.

"Exploding economy" may be needed

There is no problem as long as the economy keeps expanding at a greater rate than the annual numerical increase in the labor force. But it could create a serious situation if the expanding economy were to falter for a prolonged period of time. This is certainly no immediate problem, even if there should be another recession, since the active work force will be for some time to come relatively small compared to the proportion of the population in school, and the proportion past working years. But it could be a serious national concern when the present crop of youngsters comes of age unless we maintain an "exploding economy" to match our "exploding population."

The prediction that the office of the future will be stratified into three distinct levels is, if accurate, a slightly more immediate problem. This outlook may be a little extreme, but it cannot be entirely discounted. Even though office automation will give a company more flexibility and responsiveness in reacting to external conditions of business or competition, it must, by its very nature, impose a tighter discipline on the internal workings of the company, in which many of the major data processing levels will be controlled by the requirements of machines and the time schedules of machines. Moreover, by taking over many of the dull, repetitive, mechanical tasks now performed in many offices by humans, it will no doubt give everybody a chance at more stimulating jobs. But what will happen to those people who are much happier—and much more effective—at dull, undemanding jobs than they

(*To page 64*)



New computer ability to process several problems at once means machine can be linked to variety of input and output units, serving differing departmental needs.

Willard Johns, supervisor of Graphic Arts, examines paper master before routing it to operators

Highly mechanized reproduction section proves vital link in automated system

National Distillers finds output speed of electronic data processing system calls for increased pace in central reproduction. Here's how it's achieved—

NINETY NINE Park Avenue in New York is the central headquarters of the vast enterprises controlled by National Distillers and Chemical Corporation. Here the many activities of beverage and chemicals management and sales are coordinated by an intricate and highly efficient system of paperwork automation.

The corporation's business encompasses forty plants, offices, warehouses, and ordering and shipping points in 27 cities. This decentralized network is connected by a 7,000 mile Western Union leased wire allowing communications between all points to be almost instantaneous. Through a carefully organized central office, information concerning sales, inventory, production control, orders and other information is processed with optimum speed and efficiency.

As a key point in this operation, the Reproduction Department is called upon to perform prodigious amounts of work. Out of this department comes material vitally necessary in the success of a huge corporation such as National Distillers. Letters of all kinds needed in amounts of five to five hundred, new field manuals and additions to field manuals, continuous publicity releases and internal information releases comprise a large part of the work. Sales information forms, shipping rates, and price schedules needed by an extensive sales force and by management executives are reproduced in a matter of hours to keep this fast moving organization on its toes every day of the year.

Willard J. Johns, Supervisor of Graphic Arts, in charge of the fifteen-man Reproduction Department, has all the necessary equipment to take care of the mountainous amount of paperwork that flows through his department. Mr. Johns estimates that about 350,000 sheets of paper come off his presses and duplicators each month. A combination of a Haloid

Mr. Johns checks progress of a job being run on Davidson Dual-a-matic

Xerox 1218 and two Davidson presses, a model 242 Dual-A-Matic and a Model 239 Dav-A-Matic, make this amount of work possible. A third Davidson press is on order. With the exception of jobs requiring only two or three copies, duplication of material is processed by preparing paper printing masters and running off the required number of copies on one of the presses. Short runs are the usual case. The Dav-A-Matic is equipped with an automatic plate changer. This device changes the paper masters while the press is running, so that a number of jobs can be run consecutively on one press without any time lost in changing plates. The Dual-A-Matic has a quick change clamp that makes changing plates quick and simple.

A telling example of the increased efficiency of this operation is illustrated by the reproduction of a monthly report. Previously this report, that now is 500 pages and prepared in 60 copies, took two and a half weeks to produce. Now the job takes two and a half days! This includes plate preparation, printing and collating.

National Distillers' highly automatic system of data processing produces tremendous amounts of information. A high-speed, well organized reproduction operation is needed to print and distribute as quickly as possible the facts, figures and information assembled in numerous categories. Mr. Johns' department does just this.

Plant, headquarters notified

Data is gathered in the following manner: sales, inventory and production information is handled on punched tape teletype transmission that delivers data through a relay center simultaneously to the New York central office and to the plant concerned with the order. With beverage sales, this system allows the plant to be alerted immediately, get the whiskey out of bond and the order into production while the sale is being cleared in the New York central office.

For both the beverage and chemical business, this coordinated system feeds information into a Remington Rand Univac 60 Computer at headquarters. Important information is simultaneously available to the company's executive, sales, production, credit, traffic, and accounting departments. As much as 95 percent of original order writing in sales offices is performed automatically through the operation of prepunched tapes and cards in typing machines.

The way this works for beverage orders is highly efficient and automatic. Upon receipt of a customer's order, the sales office uses prepunched tapes containing information about customer, product and shipping to prepare an Internal Order on continuous multiple part forms. Along with variable information on the order, a second tape is prepared by the automatic writing machine for transmittal by teletype to the plant concerned and to the New York central office. At the plant, a receiving teleprinter produces an Order Invoice to enable the order to be prepared for shipment and billing while waiting clearance from New York.

In New York a receiving teleprinter produces an Internal Order with copies for all departments concerned. Selected information on punched tape is then converted to punched cards

(*To page* 68)

Sometimes the only remedy for the "traditionalist" who isn't going to let anyone change his ways is to set off a large firecracker underneath him.

Are your systems meshed with your people?

The best system ever devised will work only as well as employees make it work. Here are some measures management can take to insure "quality" personnel—

by Raymond Dreyfack

Director of Tabulating Systems, Faberge Perfumes, New York

THE BEST office system in the world may easily seem the worst if the people involved in its operation desire, either consciously or unconsciously, to make it so. Despite impressive advances in technology and automation too many office workers still display indifference, and in extreme cases defiance, towards management and its objectives. Sometimes the employee with the negative attitude is not completely to blame for his feelings.

An employer's lack of concern over the well-being of his workers will usually inspire a counter-indifference that can reflect itself on the profit and loss statement. In this area management and labor have a dual obligation to create harmonious relations. Moreover, it follows that since management has the facilities of organization it is here that the main initiative should lie to actively produce and maintain the harmony which is so essential to good job performance and systems coordination.

Henry David, Director of the National Manpower Council, states, "...the well-being and progress of the society as a whole depend heavily if not primarily, upon the *quality* of our manpower resources..."

It is management's responsibility to itself and its personnel to take certain definite actions to maintain this "quality" on an optimum basis.

Among the numerous factors to be considered in evaluating the contentment and well-being of personnel, money always has and probably always will, rank foremost. This does not imply that the arbitrary awarding of high wages is a cure-all for anything. On the other hand, it stands to reason that an above-average person will not long be satisfied with a sub-standard income.

Progressive management has come to realize that the maintenance of a reasonably forward wage structure is economical in the long run due to the savings in break-in time, over-lapping time which refers to the employment of two people on the same job during the normal two week "notice" period, and higher quality standards resulting from a low turnover rate.

Most important is the feeling people want to have that they are "going somewhere" on the job. Wherever conditions permit, some type of wage incentive, however nominal, is much to be desired. There's no more effective way of letting an employee know that management is aware of his conscientious efforts than by awarding him monetary recognition on a periodic basis.

Are you getting through to your workers? Are they being left in the dark regarding certain aspects of their jobs, or company objectives? Workers like to feel important, worthy of management confidence, part of the team. Most people would rather be abused than ignored. The interview system affords management and supervision an excellent chance to sit down with the man on the job and talk things over. Find out what he thinks, what complaints he may have to make, suggestions he may have to offer. Pitch him out, if necessary, but be sure to pat him on the back if his efforts warrant it. Let him know how you rate his work and abilities—where he stands from management's point of view.

Where there is no readily accessible meeting of the minds between worker and supervisor grudges and gripes may

Produce a carbon copy of every indispensable man—always have a subordinate capable of stepping into the boss' shoes.—This is a good rule to follow even for subordinate spots.—There should always be at least two workers capable of doing any given job.

be harbored over long periods of time. Such reactions produce tensions which are directly reflected in job performance. It's much more practical—and pleasant—to nip these things in the bud before they take on serious import. Give a worker the feeling he has a ready supervisory ear when needed and a good deal of misunderstanding and dissension can be straightened out before damage is done.

A system is no more efficient than the people assigned to carry it out. The supervisor should ask himself constantly, does everyone understand fully the job being done? Is there a shortage of either ability or job know-how in the department that is being reflected in errors or confusion? It will ultimately cost more to leave a job in uncertain hands than it would to invest a little more in competence and experience. Studies should be made regularly to assure that every facet of the operation is adequately covered in these respects.

The daily behavior of human beings is guided by many different factors. Home life, sex life, age, health, weather, politics, world conditions, etc. Those of us who are affected by these factors in a way that does not cause undue notice among our fellow humans are said to be well-adjusted. Others will be judged either eccentric, poorly adjusted, or downright difficult, depending largely on the status and income level of the person being judged.

Handling problem workers

Almost every office has its prima donna, its bossy type, its arrogant character, its belligerent individual, etc. We also have the office drinker and the office wolf. Personality traits, and the effect they have on systems harmony, cannot be ignored by management. On a humane basis every effort should be made to fit the "odd-ball" into the daily routine. Sometimes this can be done by isolation tactics. Other times a good heart-to-heart talk between worker and supervisor might be in order.

Humanely, it's important to give the worker with the personality problem the impression that management wants to help. It's equally important, however, to consider the rest of the staff and the work output. To what extent is our hard-to-live-with friend disrupting the precedure? Is he continuing to be difficult even after repeated discussion and warnings? Unfortunately, it sometimes reaches the point where firm discipline must take the place of helpful counseling. A point where a worker must be frankly advised, "Toe the line, mister, or else—."

As previously pointed out everyone likes to feel important, that he is making an appreciated contribution. It's difficult for a person to attain such a feeling if he does not fully understand the significance of his job. In many firms, especially large ones, where tasks are broken down and sub-divided, the worker understands only the part of the job for which he is personally responsible.

He might have a vague idea concerning the overall project, but the actual reason for his function is hazy. Take, for example, a punched card billing system where one set of clerks pulls cards, another group key punches information, additional clerks check invoices, etc. Each of these operations is vital to the ultimate production of the bill. The importance of each operation should be stressed. People should be shown how their individual job fits into the overall pattern. It will make their specific jobs more interesting. This, in turn, will encourage them to increase their productive output and strive for greater accuracy.

Quite often an intelligent, conscientious, highly imaginative person doing a routine clerical job is of little value to his company. Of little value also is

the steady, dependable employee with the average IQ who is engaged in a brain-splitting assignment involving intellectual judgment and ability. A person who is forced to unduly strain his mental capacities will become nervous, tense and generally unhappy. The imaginative person stuck in the dull, routine job will become frustrated and bored.

Some people thrive on responsibility; others loathe it. Some want advancement; others are satisfied to find a niche and remain there. Any loyal, conscientious employee will be of immense value to management if he is properly utilized.

Here again the job interview plays a vital part in informing management with regard to the ambitions, desires and capacities of personnel. Questions like, "Do you understand that report on Estimate Analysis?", "Do you object to sorting those papers six hours a day?", "Would you rather be working on the correspondence files?", etc., can produce answers which may reveal unexpected insights into the minds of workers.

It's extremely important to set up at the outset a clearly defined breakdown of job authority and responsibility. It's the duty of the supervisor to see that the work gets out in time. It is equally important that assignments are distributed in such a way as to leave no doubts with regard to who is supposed to do the various jobs, and who is authorized to issue orders and instructions concerning them.

A situation often arises where one worker resents being told what to do by another worker of the same rank. Here again personality enters the picture. Care must be taken to keep in line employees who are inclined to be "bossy." Resentment is as destructive in the office as elsewhere; it interferes with smooth systems performance.

On the other hand, it's often logical and practical for an old-timer to give job orders to a person of comparable status but less experience. In such cases, however, if the possibility of conflict and resentment seems to exist, it would be preferable for management to sponsor the procedure. A supervisor, for example, could tell a worker, "Tom will tell you what to do on this job. He's had a lot of experience with it, and knows the procedure." Here there can be no resentment of the worker towards Tom, since the whole idea of his issuing orders originated with management.

In this area of administration, too, the job interview can prove most helpful. Petty resentments and gripes can be brought to light before they develop into serious problems. Egos can be soothed, sensitive trouble spots adjusted for the general good.

Keep shift output steady

Job turnover is one of the most neglected aspects of modern office operation. So often a fine system is planned, procedures carefully laid out, processing aids and short-cuts ingeniously contrived—and then the project is crippled by careless job turnover arrangements.

This is particularly important where more than one shift is in operation. One fairly common situation arises when an experienced person runs a job during the day shift. At quitting time he turns over the work to a second shift man who is possibly fuzzy on some of the details, or perhaps, because the second shift is short-handed, may be picking up the work for somebody else. It's not unusual in such cases for one man to pick up several different jobs all in the space of a very limited time.

When a man's work is done for the day it's human nature for him to want to go home. Even a conscientious worker may sometimes "cut corners" a little in order to get out on time. This practice, if not controlled, can prove quite detrimental to the operation. The problem is especially urgent in organizations acting as service bureaus either for their own firms or for outside clients.

It is a supervisory responsibility to determine that job performance is maintained all down the line, from worker to worker and from shift to shift. Procedures must be clearly and carefully outlined on a step-by-step basis, using well prepared manuals and job sheets. New employees especially should know what is expected of them at all times. Very often a new person is left out in right field during the break-in period. He is not yet a full contributor to the organization and, when the work is rushed, supervision sometimes has a tendency to ignore him in favor of more productive employees. This is not wise. The more he is neglected and ignored the longer it will take for him to become a productive asset of the department and company. Moreover, by being kept constantly "on the ball" his work habits along with his respect for supervision will be kept sound from the start.

An intelligent person, be he a management employee or a kid just out of school, will think of advancement in terms other than money alone. Naturally, a person's standard of living is enhanced by the rate of increase of his income. But this rate is directly proportional to his knowledge, ability and experience. Broadly speaking, these three qualities are attained through education, whether formal or informal, whether acquired through schooling or through the reading and study of magazines and texts, on the job or off the job.

The day of the supervisor keeping his knowledge to himself in order to make his job indispensable is becoming passé. In order for a man to advance to the next higher job he must first have a good assistant under him ready to fill his shoes. This follows all down the line, from office boy to president.

The employee with above average intelligence will become discouraged if he is denied the chance to learn. It is to management's advantage, as well as that of the individual, to make available as much training as possible through classes, lectures and orientation, and a generous distribution of pertinent written material. The person who takes advantage of this opportunity is the potential supervisor of tomorrow and the man who will make possible his immediate boss' release for a higher job.

Someone once said, "If a man is indispensable, fire him." This could be more reasonably stated, "If a man is indispensable, produce a carbon copy of him." In other words, there should be more than one person in the department capable of doing every job. If Gladys is out sick, Mary or Eileen should be able to fill in on the Cost Report. This flexibility pays off in many ways. It keeps the work output moving on schedule. It keeps the wrath of management from descending on supervision. Most important, it helps preserve a supervisor's peace of mind.

Think back. Can you recall a time

(*To page* 74)

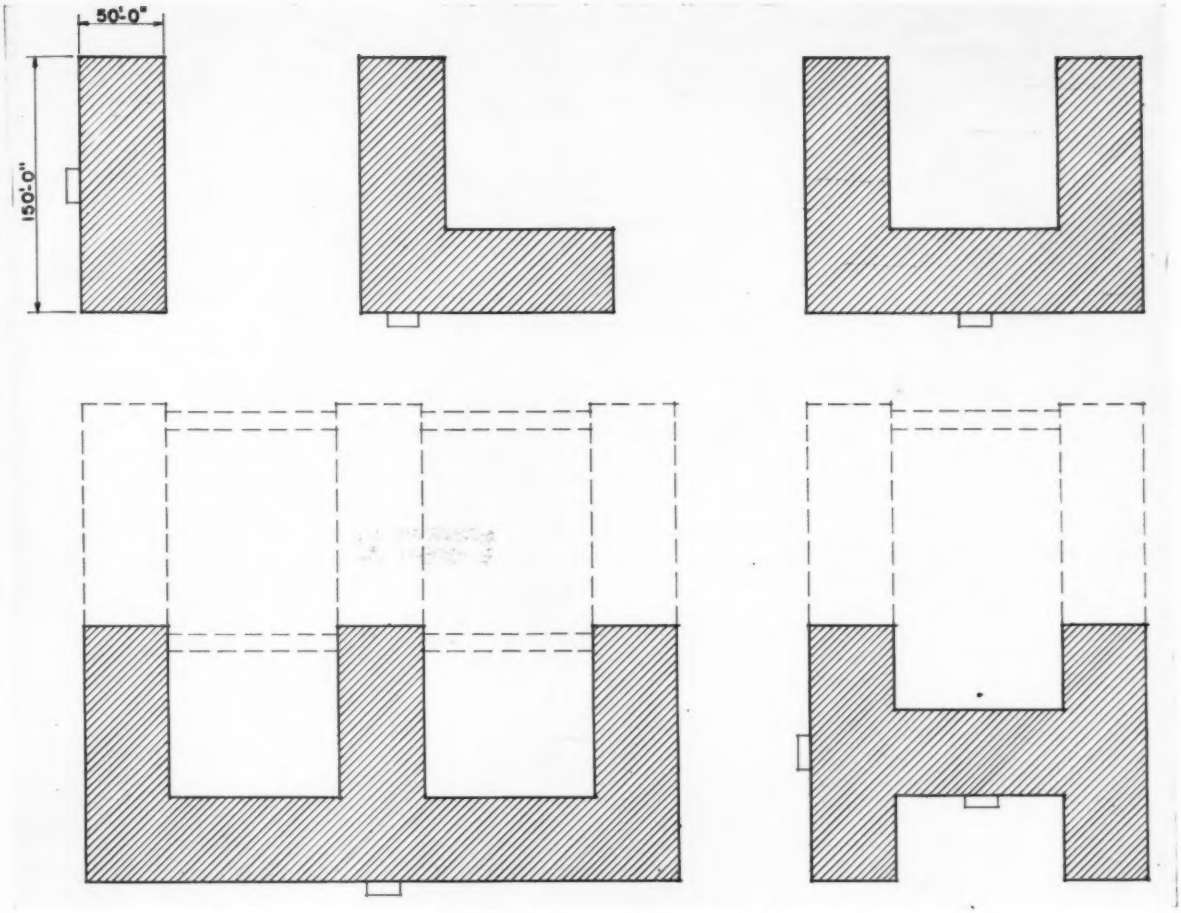


Diagram shows how basic rectangle or L-shape rural building can be expanded

Office building and office layout planning

Excerpt from the book "Office Building and Office Layout Planning," which will be published by the McGraw-Hill Book Co. in the fall of 1959.

by Kenneth H. Ripnen

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ASSUMING that we plan to build our own building, how do we progress from the planning of interior space to the final design of the building?

In the design of new office buildings there are several basic shell arrangements which can be used to advantage. They are the simple rectangle, the L-type building, the E, I, U, square O-shape buildings, and finally, the extremely functional design of a large rectangular general office area with attached expandable wings for executive and special service areas. Still another possibility is the pentagonal type.

Where the size of the site area does not limit the floor space of the building, which is generally the case in a rural area, the horizontal height of the building should not exceed five floors in any of these basic building plan types. In city locations, on the other hand, where building density, and land costs are both high, a rectangular or square shape with a number of floors will usually prove most economical and efficient.

The rectangular shape building is one of the most common units in architecture. Generally, a rectangular shape building is also one of the easiest to lay out and to build. If such a shape is adopted, it should be laid

out so that there are at least two appendages for building services.

Another excellent building plan is the E type shape. This arrangement may start as an L-shaped building. As additional space is required, additional preplanned, symmetrical building units are added. By the same token, the L-shape by the addition of one unit can become a basic U or F-shape building.

Alternatively, a plan may start as an E-shape,with expansion needs being met as they arise by simply extending the wings of the building.

Among the many advantages offered by the E-shape, particularly in a rural setting: it offers maximum natural light and window space; departments may be expanded or contracted very easily; executive office space can be segregated quite completely from general affice space if that seems desirable.

The basic shapes discussed might be termed the conventional architectural plans for an office building. But today, there is a growing feeling, for the rural office buildings, that the plan shape must follow the interior functional requirements, must be in effect a package or shell enclosing the interior layout plan that is most efficient functionally for the company.

Multi-floor skyscraper type buildings as mentioned above, will usually be based on some modification of the rectangular or square shape. Most such buildings are speculative, designed for maximum rental appeal, and therefore offer some drawbacks to any company as compared with a tailor-made design, conceived to meet a given company's exact needs. However, even with this characteristic of speculative buildings taken into consideration, most of them share one common mistake which is not necessary; they usually have only one utility core, placed, as its name implies, in the center of the building. This will always present circulation problems on each floor area, since the center of the floor is blocked out entirely by building service facilities, and the usable area is restricted to a wide perimeter around this core. To go from the southwest corner of such a building to the northeast corner it is necessary to go halfway around the entire building. Moreover, because of this break in open interior space created by the location of the building services, departmental expansion or contraction is made more difficult, as is the circulation pattern between departments. In short, the flexibility of office space for a tenant occupying one or more floors is compromised when a single core building is used.

The difficulty here lies in the fact that most rental buildings today follow the center core pattern.

Conditioning existing space

The office building in which structural, physical and mechanical elements are truly coordinated to serve the office functions is, of course, the ideal. Every structure is not a tenant-owned building, however, and therefore cannot—in its original state—meet this ideal fully for each tenant.

That doesn't imply that the tenant can't do a great deal to condition space in an existing building for the exact needs of his office. However, such conditioning means precise architectural and engineering design and meticulous coordination of the structural, physical and mechanical elements of the office to contribute to the overall efficiency of the space arrangement.

The reader's first reaction may be that these elements seem to have little to do with layout. The truth is that they have everything to do with it; they actually can be used to control it.

Since structural, physical and mechanical elements—the column span and window module, the underfloor duct system, the air conditioning arrangements, the varying heights of the hung ceilings, the lighting pattern—all control layout, they must be planned simultaneously with layout if the final office space plan is to be effective.

How do these elements influence layout?

In Chapter Four we discussed the distinctions between "integrated" and "compartmented" space, citing the former plan as one in which general office areas are left open, with a minimum of partitioning. The "integrated" space approach is the one that is gaining most favor with companies today. But within the overall theory of integrated space, there are two further sub-divisions, two schools of thought. Each of these schools employs the auditorium principle, in which general office areas are left open, and any necessary divisions are provided by dwarf movable partitions or furniture groupings. It is in the coordination of structural, physical and mechanical elements with layout, that the two schools differ. One school employs these elements in such a way as to give almost complete layout freedom: desks, partitions, electrical and telephone connections, machines can be placed almost anywhere in the office area. The other employs structural, physical and mechanical elements in such a way that, although there is great layout flexibility, there is not absolute freedom. The second school in effect freezes the number of possible layouts that may be made by the way in which it uses or locates underfloor ducts, lighting fixtures, hung ceiling breaks, and air conditioning supply and return grilles.

The distinction between the two schools of integrated space partisans is represented by the basic mechanical module selected to condition the space.

Let's say we are faced with a large open area in which we are to establish our general office space. We are prepared to condition that space in terms of the type of office we wish to create. Depending on how we condition it, we can provide our future office with absolute flexibility in placement of dwarf partitions, desks and machines. Alternatively, we can give it a considerable degree of flexibility—but flexibility which can only be expressed through a certain number of basic office layout patterns.

Perhaps the simplest way to illustrate the difference between the two approaches is offered by the underfloor duct arrangement. Desks need telephone and electrical connections. Our choice as to arrangement of mechanical elements—in this instance the underfloor telephone and electrical ducts—of the office determines whether that office is to have complete flexibility in future desk arrangements, or whether it is to have only relative flexibility. If we wish complete flexibility, we will use a grid type underfloor duct system in which ducts cross each other at regular intervals or the corrugated steel deck type floor construction. If we wish relative flexibility, we will use continuous parallel underfloor ducts spaced at regular intervals.

Let's see how this basic choice influences the final layout of the office.

Continuous strip underfloor ducts impose limitations on office layout—which in our opinion is a good thing.

(*To page 66*)

Let's take the starch out of present white collar communications programs

Clerical workers' status and attitudes are changing today, and the information program that doesn't adapt to this change may lead to trouble—

by Beverly BySura

TRADITIONALLY pro-management in his attitudes, the American office employee has always looked toward the front office for leadership and for information. Today, sharply aware of their needs and wants, the white collar workers comprise a larger proportion of the labor force than ever before, and recent developments have undermined their traditional acceptance of management policy and procedure.

As disturbed over the growing installation of electronic data processing and office computing machines as his production counterpart was toward automation in the plant, the office employee is developing a growing feeling of insecurity. His former level of prestige has been undercut by a high production wage scale and an extension of fringe benefits into the factory. As white collars—lace-edged, pearl trimmed, starched, or drip-dry—continue to approach the number of blue collars in an ever increasing ratio, the office employee finds his or her personal privileges, chances for advancement, and individual recognition decreasing with every addition to the office force.

Because office employees are increasingly aware of the loss of some advantages they formerly enjoyed in relation to production workers, they are themselves more and more concerned about their questions, problems and apprehensions, and are actively seeking solutions.

In his quest for information, the employee will first turn toward management. If he is not satisfied repeatedly, and fully, the way is left wide open for others to take over the race for leadership.

Because the white collar area is the last frontier for unionization, the determination of union leaders to achieve the goal of office organization en masse is intensified by the hope of doubled

Management can no longer assume office employees are basically are basically pro-management in attitude: it should pay as much attention to keeping them informed as it does production workers

An effective, *continuing* program of planned management communications . . .

membership rolls. The contest between unions and management for employee support will be won by the group which first recognizes the real needs and dissatisfactions of the white collar employee, and provides the answers to his satisfaction.

All of this has special significance for the personnel director, industrial relations head, or communications manager, since for the last 15 years, management attention and employee relations activity have been focused largely on the factory worker, virtually ignoring problems on the office level.

Striving to achieve, or maintain pro-management attitudes on the office level requires that some sort of dynamic rapport be established through planned programs of three-way communication —up, down, and across. Assuming that wages, physical conditions, and fringe benefits are in line with those offered by other concerns in the community, effective communication is the only management tool that can enable employees to understand and appreciate the sincerity and soundness of management action and motives, and stimulate the entire organization toward the common goals of both the company and the individual.

How can you improve the communications climate in your office? You can start by taking a good long, objective look at current communications procedure and the state of present employee relations and attitudes toward management. There are certain principles of healthy human relations that apply to all offices, large, medium or small; and while successful communications programs will differ in detail, the principles behind them will remain the same.

The first step, then, is an objective appraisal of your office—a good square look at the true situation.

According to Dr. George Baehr of the University of Chicago Industrial Relations Center, the greatest obstacle to good office communications is getting management to realize that a problem exists. Because the office employee has traditionally been pro-management in his attitude, management tends to take this attitude for granted.

Management sees only loyalty

"Management," says Dr. Baehr, "has a peculiar faculty for looking at office personnel with blinders, seeing only loyalty and cooperation wherever it turns. Sometimes this is true, but more often, it is because management is unwilling, or unable, to see things as they are."

Only willingness to look at things as they are will lead to needed action. There was, for example, a midwestern office where management was proud of its smooth running, frictionless character. Recently it was organized, apparently overnight. Union groundwork had been laid for months without the knowledge of management.

Employees later revealed:

"We didn't really want a union in here. Some voted for it just to snipe at 'the top.'" "It's not the big things as much as the little everyday gripes that never are taken care of."

Another example of the power of the "little things" is the case of the small eastern office which organized because—difficult to believe—the keys of a middle-aged secretary's typewriter stuck. When a younger, more attractive secretary was presented an electric typewriter after two weeks on the job, the older woman became the most powerful force in the union's drive for organization.

Problems such as these are sometimes hidden, and the facts have to be dug out. Executives who have risen to the top have one characteristic in common. They deal with facts. When they make a decision they do so on the basis of hard, realistic and objective thinking. The same factual and objective approach should be taken with respect to employee relations. Having a policy is only half the story. The real test is how it works in practice.

Knowing for sure what is happening —and how employees feel about it— is a vital precedent to any intelligent employer action in improving his communication program.

Since the objective of effective communications in the office is high morale and good performance based on the right kind of relationships, a careful scrutiny of the personnel and what they want in their jobs should follow the study of office policy and practice. Many reliable surveys have been made of what constitutes job satisfaction for the office employee. Though emphasis will vary, all agree that there is an urgent need to strengthen individual satisfaction on the job.

Rod Harris, of the National Association of Manufacturers, reports that the office employee, more than anything

. . . will not kill the office grapevine, but will help to render it harmless

else, needs reassurance of his prestige and status. "Formerly, a certain amount of prestige was inherent in the white collar position itself. Now, however, he needs constant reassurance of his own importance and value. When the office employee feels that he or she is just another secretary pounding a typewriter, draftsman at a drawing board, or clerk at a desk, I doubt that he will be extremely interested in his job, or have a high regard for his company.

"Any successful communications program is based on a thorough knowledge of the employee audience. Generally, the office employee will be better educated than his production counterpart. His level of sophistication will be higher. He demands, and expects, freedom from the time-clock, and a congenial working environment. An effective communications program will take these differences into consideration."

The following is one of the characteristics of the "average" office employee that requires particular attention, according to Chicago University's employee relations program, "Building Effective Communication:"

"The office employee feels he has a contribution to make in the planning, policy-making, and assignment-making functions related to his own particular job. Therefore, he expects a good climate in relations with his supervisor and wants to participate in decisions related to his job to the extent that he has something worthwhile to contribute, and expects supervision to recognize his ability to make such a contribution."

In addition, it must be remembered, that because of the physical proximity of white collar personnel to management, and because of the nature of his work, the office employee picks up bits and pieces of information flowing between management levels. If the employee is not to make his own interpretations of the fragmentary information that is available to him, he must have a basic understanding of management aims, and confidence in management's motives. More than in any other part of a business, the "grapevine" is active in the office, and is particularly notorious for the inaccuracy of the information it carries.

Chicago communications consultant William Boyd Andrews reports, "There are 'communications' in every office. There will be communications wherever there are people. Management's goal is to make office communications effective—to make it serve management's purposes, whatever they may be. But to effectively serve management, employee communication procedure must be *continuing*. Employers who wait until there is a crisis before turning on communications switches, invariably find that there is no fast acting employee relations wonder drug that will tranquilize their office personnel, and create satisfaction out of dissatisfaction."

An advisory group set up by the National Association of Manufacturers examined the needs of white collar personnel. The group findings indicate that there is danger when employees:

1. Do not know how well off they are in comparison with employees in other offices in the area, comparable in size;

2. Do not believe the employer's statements or claims because there is no evidence they are based on actual and accurate surveys;

3. Do not accept the employer's conclusions because the credibility of his statements has not been established through an existing communications program.

It is a part of human nature to take for granted the good things, and to complain about the bad. This is particularly true in the area of fringe benefits which may have been in effect for some time. Lack of appreciation can be forestalled only by continuing efforts to resell the various values of the benefit programs—and of the company itself—not only to the employee himself, but to his family.

The same is true with personnel policies and wages. Employees need constant "reminders" lest they forget the extent of the company's efforts to make the organization a good place to work.

Dr. Baehr emphasizes that the office communications manager, whatever his official title, is in the same position as a man who wishes to make an effective speech. Before anything at all is spoken from the platform, the effective speaker sizes up his audience.

"The speaker knows that it is vitally important for him to start where they (the audience) are. He must know their attitudes, their prejudices, their level of comprehension and receptivity. The successful speaker, like the suc-

(*To page* 75)

Automation will completely change office growth, work patterns, NOMA hears

Speakers at New Orleans convention stress social, economic influences that are forcing changes in office—

COMPUTERS, the "great equalizers" of modern business, may be responsible within the next twenty-five years for a complete reversal of present corporate structure and growth patterns, James J. Macdonell, Price Waterhouse & Co., Montreal, predicted at the annual conference of the National Office Management Association, held in New Orleans, May 24-27.

Other speakers stated that the impact of automation will stratify all office workers into three distinct groups: machine tenders, programmers and analysts, and decision-makers; that a voicewriter capable of transcribing dictation directly to paper, and correcting the director's grammer as well, will be marketed within ten years, and that automation will reduce the percentage of the total work force engaged in office work.

A new president, first vice president, and slate of officers and directors were elected at the New Orleans meeting. Walter Emmerling, Procter & Gamble, Cincinnati, was elected International President, and Richard B. Hodges, Planning Division Manager, Dennison Manufacturing Co., Framingham, Mass., first vice president. Other vice presidents chosen at the New Orleans meeting included Ralph W. Purves, Personnel Manager, British Columbia Electric Co., Ltd., Vancouver; Evan L. Hamilton, Office Manager, Armco Steel Corp., Middletown, O.; and James R. Taylor, Head, Department of General Business, Wayne State University, Detroit.

New directors are Lathrop F. Morse, Treasurer, Ross Roy, Inc., Detroit; R. Herman Wright, Office Manager, Tube Turns, Division of Chemetron Corp., Louisville, Ky.; Kenneth J. Zerwekh, Chief Accountant, Caterpillar Tractor Co., Peoria, Ill.; F. W. Capper, Assistant Personnel Director, Equitable Life Insurance Co. of Iowa, Des Moines; Philip Q. Archer, Office Services Manager, Searle Grain Co., Ltd., Winnipeg; Laverne G. Rhodes, Supervisor of Office Services, Weyerhaeuser Timber Co., Tacoma, Wash.; Fred S. Cook, Assistant Professor of Education, Stanford University, Stanford, Calif.; and Fred A. Schultz, Assistant Secretary, The Unity Mutual Life Insurance Co. of New York, Syracuse, N. Y.

Macdonell, in his talk on "The Administration Executive," declared that three main influences will accelerate the changing nature of the office.

"First," he said, "there are the areas outside the average business that tend to change its shape. At the head of the list, we must place the influence of government policy on the business climate. For instance, the policy of defense spending affects thousands of business organizations—large and small. Government policy is virtually a matter of life or death in some companies, and a sudden shift of policy can create chaos in the plans and operations of many others. The scrapping, a few months ago, of the program for producing the Canadian Arrow aircraft is a case in point. Within hours after the government announcement, the company and many of its suppliers had laid off 50 per cent or more of their employees. In the age in which we now live the administrative machinery in our businesses must be geared for rapid shifts. It must be flexible so that it can be adapted quickly to the influence of new requirements. A prompt and accurate evaluation of the effect of a large defense order on a company's operations and results can sometimes make the difference between a successful and unsuccessful tender—it could even result in a decision not to tender at all.

"Another important way in which government policy influences the business climate is in the effect of taxation, especially when taxes are used as a weapon to control inflation," he went on. "Here again, the need for an accurate analysis of future business plans, weighing the impact of tax factors, has produced a requirement for types of information from the administrative processes far different from that which was needed twenty years ago. In evaluating alternative courses of business

(*To page* 70)

Press conference for party leaders followed AMA meeting. Left to right: Dave Secunda, Director of Divisions, AMA; Paul Butler, chairman, Democratic National Committee; and Senator Thruston B. Morton, chairman of the Republican National Committee.

What is the proper role for businessmen in the political picture?

Political and business leaders urge participation on individual basis at AMA General Management Conference, but warn against corporate political activities —

THE PRESENT CAMPAIGN to inject business into politics is "ill conceived, extremely dangerous, and perhaps illegal", Arnold H. Maremont, chairman of the board, Allied Paper Corp., Chicago, warned participants in a recent American Management Association conference on the legitimate role of businessmen in politics.

Maremont's stand was contested by other conference speakers representing business and industry, and the two major political parties, although all rejected direct corporate political activity.

Other subjects covered at the General Management conference, held in New York, May 20-22, included the rise in foreign competition; the integration of top corporate policy with day-to-day operating administration; and the building of lines of succession in company executive posts.

Projecting the corporation into po'itics will lead to totalitarianism, Maremont declared, and could end "in the destruction of our free political heritage, prostitution of free citizenship, and democratic principles.

"I regard the separation of business, as business, from politics to be as important to our political health as the separation of Church from State," he continued. "We must influence our destiny through wise political action as the individual human entity, not as a corporate mouthpiece."

The fact that labor unions engage in political activities has nothing to do with the question whether corporations should enter politics, he declared.

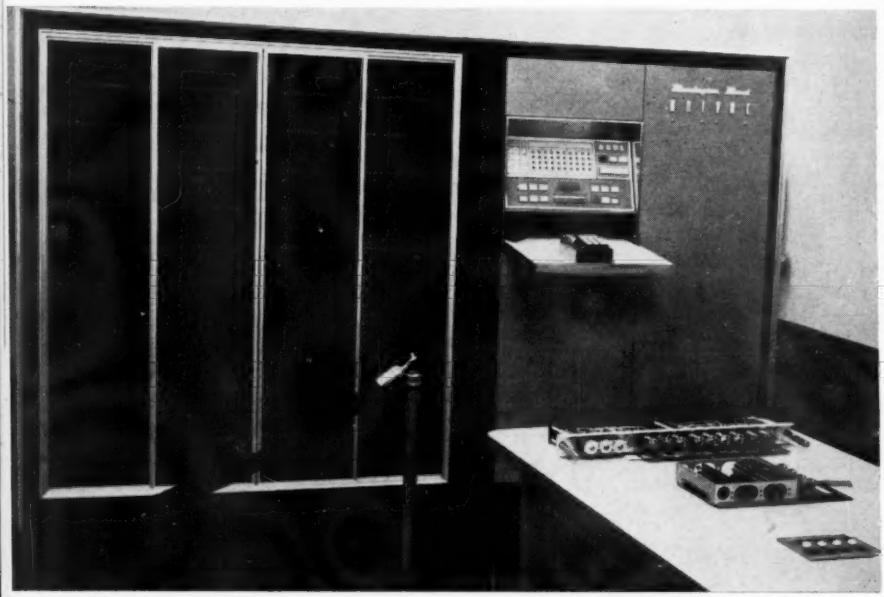
"I do not believe labor and management are locked in a death struggle," he asserted. "I have never heard responsible union leaders argue that labor ought to engage in politics for the purpose of 'clobbering business'. I think that anyone who argues that business must get into politics in order to take a fall out of labor is doing a distinct disservice to himself and his firm."

While arguing against direct corporate intrusion in the political picture,

(*To page* 72)

Remington Rand introduces solid state electronic data processing system

The new Univac Solid State 90 Electronic Data Processing System, a product of Remington Rand Division of Sperry Rand Corporation, was recently unveiled at the opening of the company's new Univac Demonstration Center, 1642 Locust St., Philadelphia. The Univac SS 90 EDP (technically known as an internally programmed, punched card, data processing system), system is said to be the first of its kind available on the commercial market in this country. Several of the systems were delivered last year in Europe, the company reported, one of which is installed at the Dresdner Bank in Hamburg, Germany. The Kansas City Life Insurance Co., and the National Bank and Trust Company of Fairfield County, Greenwich, Conn., will be among the first commercial installations to utilize the new EDP system in the United States.



Nucleus of system is the Univac SS 90 computer. Glass enclosed area of unit contains rows of printed circuit chassis. Evolution in size of the electronic circuit chassis is portrayed on table; present printed circuit at lower right is followed by chassis for Univac II, and the Univac I.

A similar "solid state" EDP system, The Athena, was developed exclusively for the Air Force as a ground-based guidance system for the Titan, Intercontinental Ballistic Missile. It is reported that the Athena operated during one stage of its acceptance test for over 11,000 hours, producing an average performance record of 99.89 per cent reliability.

The Univac SS 90 EDP system consists of four pieces of machinery: A punched-card reader; a read-punch unit; a high-speed printer; and a central processor, or Univac SS 90 computer, which forms the nucleus of the system.

The term "solid state," used to describe the complement of machines, refers to a variety of electronic components — Ferractors, transistors, and

(*To page* 66)

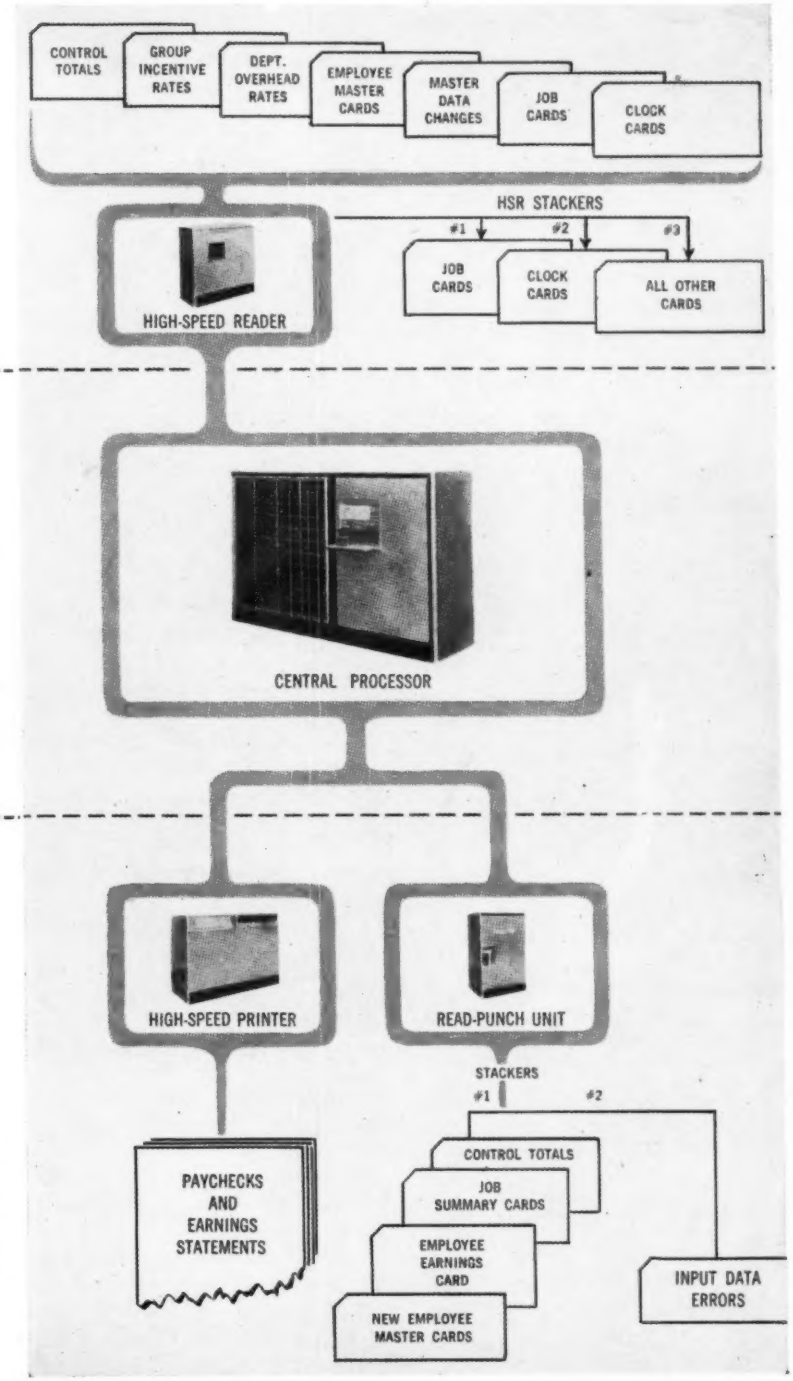
Left to right: high-speed printer, central processor, read-punch unit, and high-speed card reader.

How payroll-labor distribution computations are made in one-run computer operation —

INPUT
Punched cards containing pertinent data are arranged in numeric sequence by department and employee, and random sequence by transaction type, and placed into the High-Speed Reader. The reading unit, working at a maximum input speed of 450 cards per minute, segregates the cards into three output stackers.

PROCESSING
As the information from the punched cards is being read into the system, the Central Processor simultaneously begins to process by general incentive rate, job, and employee tables, within its memory storage unit. Obeying program instructions stored internally the Processor balances employee clock and job hours, checks employee number, automatically computes taxes, deductions, and earnings for each employee in the first department or group, for the current pay period and year-to-date. During the same operation new bond balances, indirect and direct labor costs, overhead, and other facts needed for payroll and labor accounting are gathered.

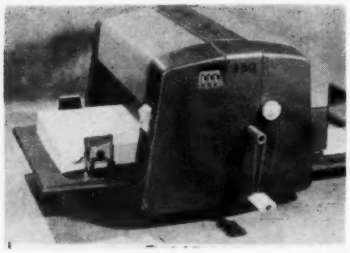
OUTPUT
The High-Speed Reader and Central Processor continue operating while the processing results are recorded. The High Speed Printer records paychecks and earnings statements at speeds up to 600 lines per minute. Simultaneously the Read-Punch Unit punches new master cards, control total cards, job summary cards, earning cards, and places them into one of its two output stackers. These cards now contain information used in printing payroll and deduction registers, labor, tax, bond, and other required reports. The Read-Punch Unit also places input data error cards into its second output stacker.



One run accomplishes these results . . .

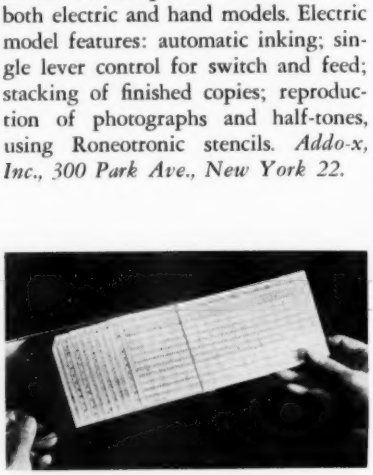
1. Calculations of current and year-to-date taxes, deductions, and earnings.
2. Paychecks and earning statements printed.
3. All labor including overtime summarized, distributed by job and department.
4. Job hours balanced with clock hours.
5. Complete information for registers and reports.

New for the office



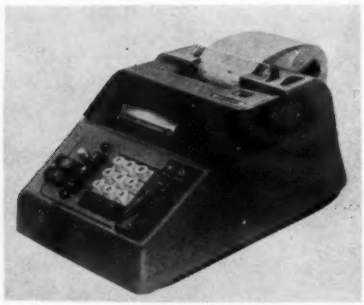
▲ Duplicating machine A-1

Roneo 350 Duplicator is available in both electric and hand models. Electric model features: automatic inking; single lever control for switch and feed; stacking of finished copies; reproduction of photographs and half-tones, using Roneotronic stencils. *Addo-x, Inc., 300 Park Ave., New York 22.*



▲ Punched card protectors A-2

Vinyl plastic sleeves protect punched cards from bending, dirt, or damage. Each sleeve is .008 inch thick with transparent front and translucent back, and can hold several cards. *Forbes Products Corp., 625 S. Goodman St., Rochester 20, N. Y.*



▲ Adding machine A-3

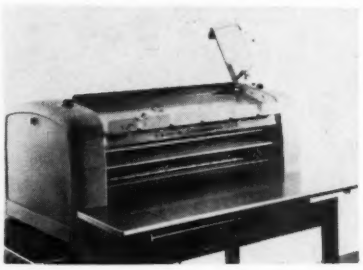
Up to 12 digits can be entered, and a 13-digit total is provided on the Multisumma 22 adding machine. The machine gives credit balances, multiplies (both negatively and positively), prints on tape and marks with an appropriate symbol the results of all operations. *Olivetti Corporation of America, 375 Park Ave., New York 22.*

▲ Tab card reader A-4

Electronic Photo Cell Tab Card Reader will automatically read 80-column IBM cards at speeds of 1200 columns per minute. The tab card reader will provide alphanumeric input to an IBM 632 Electronic Typing Calculator, and can also be adapted to adding machines, typewriters, etc. *Systematics, Inc., 10 E. 42nd St., New York.*

▼ Reproduction machine A-5

The Streamliner 100, designed for the reproduction of engineering or architectual drawings and a variety of business forms, accommodates materials up to 30 inches in width. The machine has a positive gravity ammonia feed to eliminate the possibility of vapor lock, and a printing cylinder which allows plastic coated, or photographic materials to be processed. *Ozalid Div., General Aniline and Film Corp., 28 Corliss Lane, Johnson City, N. Y.*

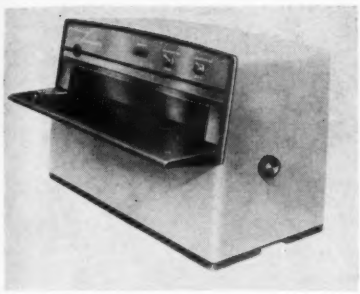


▲ Electronic air cleaner A-6

Portable electronic air cleaner requires no water or drain connections, and is easily moved from room to room. The unit is said to remove 90 per cent of cigarette smoke, pollen, dust, and dirt from the air passing through it. *Electro-air Cleaner Co., Inc., Dept. RS, Oliva and Sproul Streets, McKees Rocks, Pa.*

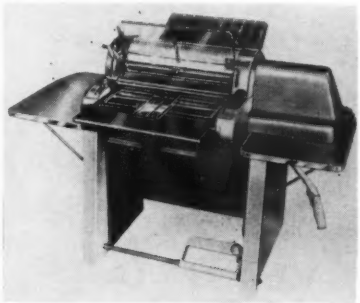
▲ Portable lectern A-7

Portable lectern-public address system uses built-in TV-type microphone, high fidelity loudspeaker, and transistorized amplifier, with fingertip controls. Operates from wall plug or batteries. *Radio Corporation of America, Lectern Sales, Camden 2, N. J.*



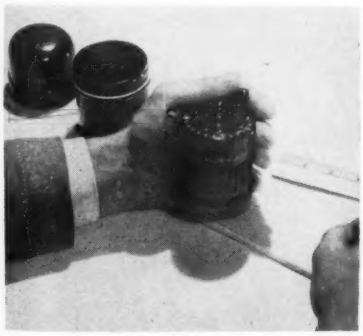
▲ Laminator **B-1**

GBC Automatic Laminator encases paper, board, or cover stock in polyester film in a reported three seconds. The unit, applying over 200 pounds of pressure, makes the sealed material impervious to dirt, grease, stains, etc. The laminator film roll capacity is 2000 feet, and it will accept material up to 17 inches in width. *General Binding Corp., 1101 Skokie Highway, Northbrook, Ill.*



▲ Duplicating machine **B-2**

Model 170 SYMM Copease-Banda system duplicating machine has, among other features, automatic line selection. The Banda spirit duplicating line made by Block and Anderson of London, England, is now being distributed by the *Copease Corp., 425 Park Ave., New York.*



◀ Calculator **B-5**

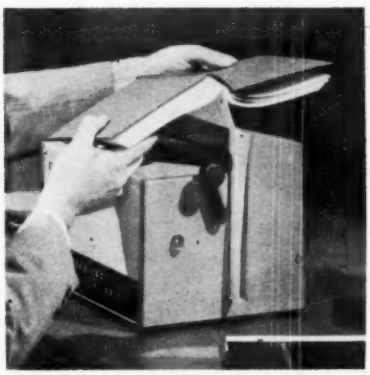
Imported from Liechtenstein, the Curta Calculator weighs 11 ounces, calculates to 999 trillion, and divides to 8 decimal places. Made of stainless steel, aluminum, and brass, the Curta comes in natural grey with black trim, and contains a color-keyed keyboard to facilitate easy operation. Price, $165.00, complete with metal carrying case. *Curta Co., 2735 W. North Shore Ave., Chicago.*

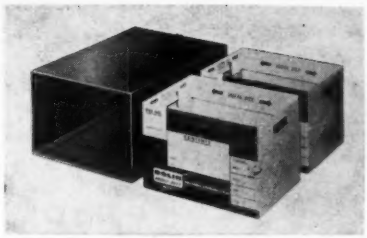
▼ Tabulating card **B-3**

Formscard is a continous tabulating card designed for non-stop tabulating systems. It is adaptable to payroll checks, accounts payable, premium notices, etc. The separation of Formscard may be accomplished manually or by a bursting machine. *Forms, Inc., Willow Grove, Pa.*

▼ Book copier **B-4**

Portable book copying unit makes exposure of book or magazine pages up to a maximum size of 8½ by 11-inches. Matrix paper is inserted in vertical exposure section and a book page is slipped in alongside. After exposure, matrix is activated in a regular Verifax copying machine. *Verifax, Eastman Kodak Co., Rochester 4, N. Y.*





▲ Storage file **B-6**

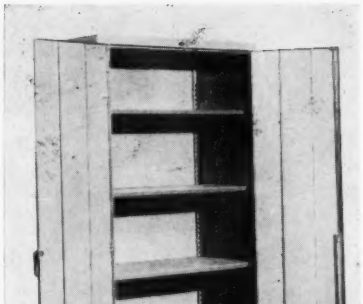
Double-Duty No. 65 storage file accommodates both letter and legal size documents. The file includes an all-steel case with two heavy-test corrugated record trays. The record tray holds 30 inches of letter, or 24 inches of legal files. *Dolin Metal Products, Inc., 315 Lexington Ave., Brooklyn 16, N. Y.*

▲ Copy holder **B-7**

The Speedrite Accounting Copyholder will accept paper up to 17 inches in width, and may be installed with any typewriter. A magnifier enlarges the line to be copied and the "trigger," when pressed, brings the next line into vision. *Hall-Welter Co., Inc., Rochester, N. Y.*

▲ Desk name plate **B-8**

Desk name plates available with hardwood bases with walnut, mahogany, blonde and oak finishes, accommodate letters ½ or ⅜ inches high on felt background. The plate face is covered with a clear, lucite panel. *A. C. Davenport & Son, Inc., 311 N. Desplaines St., Chicago 6.*



▲ Storage cabinet **C-1**

Electrically welded, sheet-steel cabinet provides compact, dust-proof storage space. Unit may be easily converted for use as wardrobe cabinet or locker. Available in a wide choice of decorator colors. *Art Metal Construction Co., Jamestown, New York.*

▲ Paper trimmer **C-2**

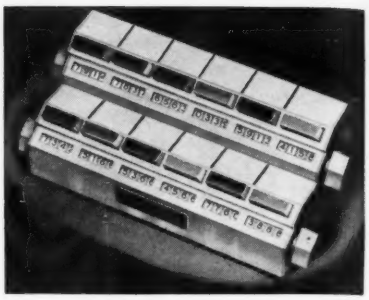
The "Metocut" paper trimmer is mounted on a hardwood base with a full-length plastic strip to prevent paper curling. The cutter carriage travels on a guide rail allowing the circular knife to roll against a straight edge to complete the shearing action. Both cutting elements are hollow ground and said to be self-sharpening. *Bienfang Products Corp., Metuchen, N. J.*

▼ Soft drink tablet **C-3**

Effervescent soft drink tablets may be purchased in six flavors, individually wrapped in metal foil. Each tablet, said to contain only four calories, makes an instant drink when dropped into a glass of cold water. *Fizzies Div., Warner-Lambert Pharmaceutical Co., Morris Plains, N. J.*

▼ Machine mount **C-4**

Level-Rite 200 machine mount designed for individual loadings up to 200 lbs. per unit, is said to absorb 85 percent of transmitted machine vibration. Adjustment of the Unisorb Level-Rite sets machinery on proper level. *Dept. WCH, The Felters Co., 210 South St., Boston 11.*



▲ Tabulator **C-5**

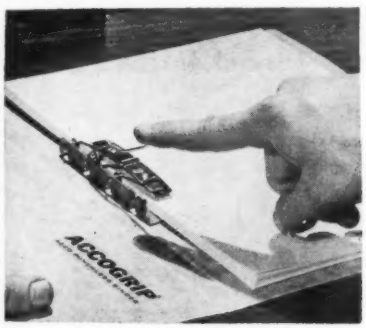
Twelve - unit 2 - step Multiple - Tally manual tabulator features modular, interchangeable unit mechanisms, and light-touch, short-stroke registration. The tabulator is made of metal and offers 12 catagories for item count variety. *The Denominator Co., Inc.,* 261 *Broadway, New York* 7.

▲ Light controller **C-6**

The Luxtrol Automatic Light Controller keeps artificial light at a preset level of foot candle power. An electric scanner mounted to measure the combined natural and artificial light relays information to a signal device where it is compared with the "Lumistat" setting. If the readings differ, the amount of artificial light is automatically lowered or increased. *Superior Electric Co., Bristol, Conn.*

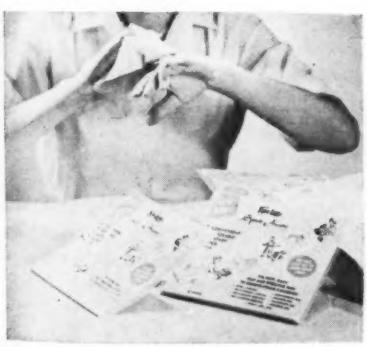
▲ Telephone amplifier **D-1**

Twinfone attachment snaps on the receiver of an ordinary telephone to amplify conversation. A second earphone may be applied to the other ear to cut out excess noise and clatter. *North American Industries. Dept. TF-35 101 W. 31st St., New York 1.*



▲ Punchless binder **D-2**

Accogrip, punchless binder made of flexible pressboard with close-back design, has spring-action clamp with a ½-inch paper capacity. Available in letter- or legal-size, in five colors. *Acco Products, Inc., Div. of Natser Corp., Ogdensburg, N. Y.*

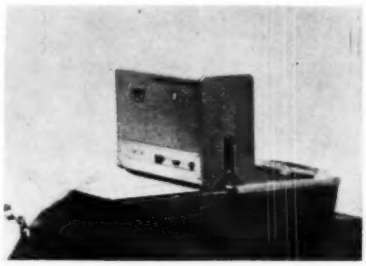


◀ Hand cleaner **D-5**

Spirit Away impregnated-paper hand cleaner is said to remove office stains caused by spirit carbon, hectograph ribbons, or inks used with mimeograph and multilith machines. The 7 by 7-inch cleansing sheets are packaged with 25 per pack, and 12 packs to a box. *Kee Lox Manufacturing Co., Dept. 101, 10 Kee Lox St., Rochester, New York.*

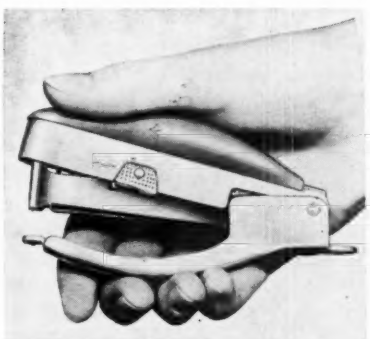
▼ Microfilm camera **D-3**

New features of the Flofilm 9600 Portable Microfilm Camera include: quick magazine loading, three-position density control, electronic spacing control between images, and an attachment for microfilming continuous forms either rolled or folded. The 20-pound unit will receive material up to 11½-inches wide. Price, $750.00 complete with case and continuous forms attachment. *Flofilm Div., Diebold, Inc., Norwalk, Conn.*



▼ Stapler **D-4**

Model 88P hand stapler has 105 standard staple capacity, and a built-in metal loop for hanging on hook or chain. The device is made of lustrous chrome, available in gray, red, or yellow Tenite trim. *Bates Manufacturing Co., Orange, N. J.*



▲ Chair cover **D-6**

Slip-on covers made of full texture "Clairemont" fabric are available for over 100 models of executive and secretarial office chairs. The slip covers are obtainable in colors of green, grey, or brown. *Covercraft Co., Inc., Goshen, Indiana.*

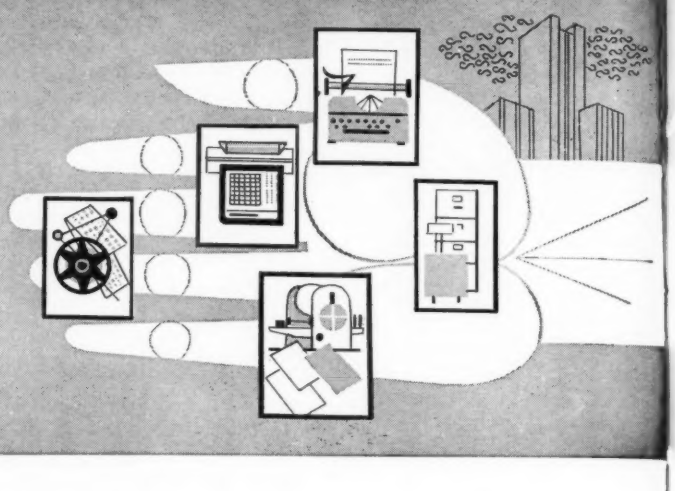
▲ Chair cushion **D-7**

Reversible office chair cushion is made of plastic foam urethane, covered with woven Saran on one side and corduroy on the other; edges are piped with white vinyl. Available in both executive and steno sizes. *Foam Div., Dayton Rubber Co., Asheville, N. C.*

For further information, use Readers' Inquiry Coupon on page 80.

A Monthly Feature

Tools of the Office



Equipment For Integrated Data Processing

by Mary D. Lyons

"INTEGRATED DATA PROCESSING" is one of the many terms to have evolved with the revolutionary—almost awesome—concept of "automation" in the office. For the past fourteen years, views on the subject of "automation" have ranged between extremes of pessimism and optimism. The predictors of gloom, although less vehement these days, still grimly visualize the future results of automation in the office as eventual mass unemployment with everyone lined up waiting for unemployment compensation checks being issued by smug office robots.

The predictors of glory, however, paint pictures of an automatic Utopia where machines will read handwriting and understand oral instructions. They claim that automation will displace drudgery, not people, and that working hours will shorten while living standards rise.

They expect office automation to bring about first, the four-day week, and then soon afterwards, a situation wherein office employees (outside of top management) will be required to spend only a few hours in the office each day—just long enough to program their machines.

Automation will benefit mankind

The optimists point out that automation has benefited mankind in the past by alleviating much back breaking physical labor; and now, electronic computers and other new technological marvels are relieving office workers of dull, monotonous, mental hardships. They also mention that most intelligent employees just don't like routine tasks, whereas machines don't care what type of work they do. And machines don't tire under the peak of seasonal overloads or need a coffee break.

Furthermore, the pro-automation people also suggest that management consider the aspects of business' increased paper work, and the fact that due to the supply and demand factors in labor during recent years, wages and fringe benefits of clerical staffs have been increasing while working hours have been on the decline.

More pessimistic thinkers state that many of the computer installations have been failures, and that most of the successful installations so far, have provided only extremely marginal economic benefits. However, they do acknowledge the fact that the failure of a computer to deliver the hoped-for output is the fault of the *human* who issued the instructions. This, of course, emphasizes the fact that successful office systematization is the key to successful computer installations.

Most people are still unsure as to whether automatic control promises boon or mishap. However, it is hoped that with proper guidance, automation can continue, as it has in the past, to relieve men and women of dreary or unpleasant work, and give them increased well-being and leisure.

The phrase "integrated data processing" should, perhaps, be clarified: The word, "integration" naturally implies wholeness or completeness, and when applied to data processing, it means that the various parts of a system are so designed that each fits neatly into an overall pattern. An integrated data processing system also suggests that the different elements do not work at cross-purposes, so that there is no unnecessary duplication of work.

The final result of an IDP system is generally obtained by arranging for the automatic perpetuation of repetitive data so that information entered into the system remains in it, in usable form, and does not need to be reentered; and that it does not emerge from the system itself except in its final processed form.

But what exactly is meant by the word "system," and how is it affected by integrated data processing? Let us consider, for example, the handling of a charge sale in a department store.

Business relies upon "systems"

The clerk is instructed in how to obtain the necessary information—item description and price, customer identification and credit standing, and other data—and how to record it. She has a means of following through from merchandise tag and customer credit card to sales slip. She has a "system."

But what then happens to the sales slip? In the first place, it is usually prepared in several parts, with the aid of carbon paper. Each of these parts has a destination, and at each destina-

tion it finds itself entered into another "system"—such as a system for recording accounts receivable, for preparing customer statements, for analyzing sales, or for determining inventory requirements. The information carried in the sales slip may also be copied into some other form—entered in a ledger, punched into a card, or the like—and in its new form is similarly entered in some "system" or other.

Therefore, it seems logical to assume that the operations of a business are broken down into a series of "systems." This suggests the coordination of the routines of one or more departments involved in processing a single related item. Thus, the word "system" implies a collective, coordinated set of activities or, in other words, integration.

A company may require two separate systems to process an order-taking function and a shipping function. In such a case the two systems may themselves become integrated if they work together in coordination as part of an overall scheme, with neither operating in a way to duplicate needlessly the work of the other, or in a way to waste the time, work, or material of the other, or toward a purpose in unnecessary conflict with that of the other.

This process can be extended so that ultimately all of the localized systems in a company can be integrated with each other. It might be said that the limits of the system are the limits of the company itself and of its operations. Integration, of course, may exist on either a small or large scale, but it is meaningless to describe any company's "integrated data processing system" until the scope of the system or of the integration has been precisely defined.

The true concept of integrated data processing, then, becomes clear. It means nothing more, or less, than the systematization within the limits imposed by the needs and capacities of a company, of the flow and manipulation of the data essential to the conduct of the business.

Automation was originally a familiar word in factories to describe the automatic movement of work in process from one machine to another and automatic control of each machine in sequence. In the office, it is usually considered to mean automatic control—that is, the automatic operation of a machine—or machines—by some external mechanical or electrical agency, and without any direct human intervention.

One such agency is punched paper tape which is used to control the operations of many kinds of machines, including typewriters, computing equipment, graphotypes, card punches, and so on.

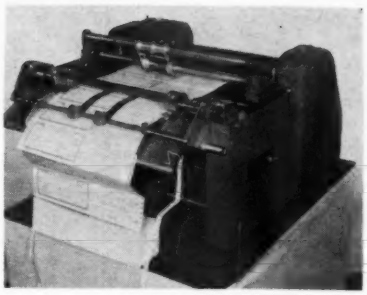
Various common languages available

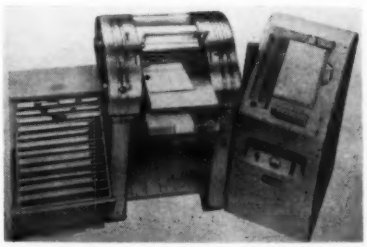
There are a number of such agencies used for the automatic control of office machinery. They are generally known as common languages, and among these may be included punched cards, magnetic tape, and magnetized codes on paper. Although this control may often be internalized within the machines—that is, various units have properties within themselves to incorporate a number of functions which otherwise would be performed by other separate machines—it does not alter the significance of what the equipment does.

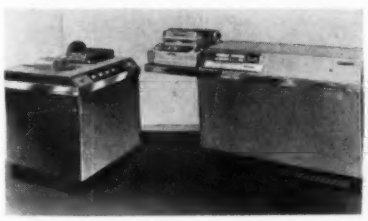
If, for example, a tape-punching typewriter is used to prepare a sales order, and if the resulting tape is then used to operate an accounting machine which prepares the bill, this billing operation is said to be automated. Yet, it is possible to obtain a single machine which performs the same functions. It does not seem reasonable to conclude that one is automated while the other is not, particularly when the latter arrangement may prove to be more efficient in a given situation.

Equipment may justifiably be considered automated if it can be controlled automatically by some external non-human agent, or if it is sufficiently complex that performance of one operation can be used automatically to control the performance of a different (not an accessory) operation. The automatic printing of credit balances in red on an adding machine, for instance, is *not* a form of automation, since this is in the category of an accessory function or a refinement, but the automatic computation of price extensions and totals on a machine used to type a sales order would be an instance of automated operation. Therefore, the term, automation implies a significant *degree* of control.

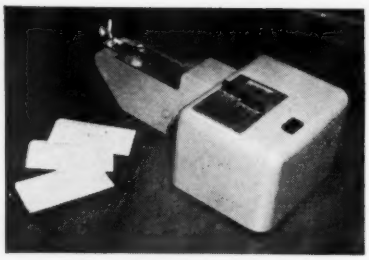
The degree to which automation is present in a data processing system can vary considerably since such a system may include some equipment which is automated as well as some which is not. In fact a data processing system may be integrated without being in the least automated. Or, on

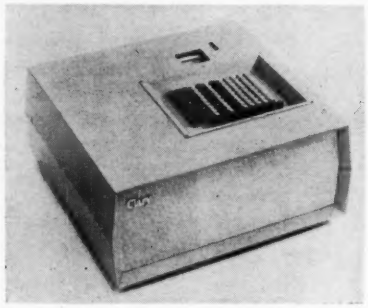


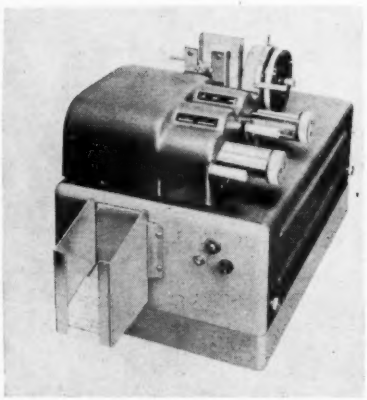


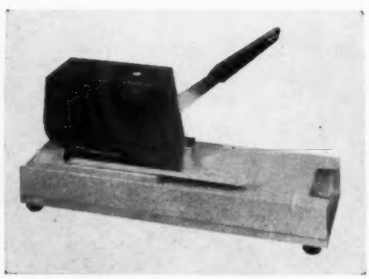


The equipment used in an integrated data processing system varies to a great degree in size, price, and application. Units pictured here also show how various types of integrated data processing equipment may vary in degree of complexity. Units illustrated are, from top to bottom, Standard Register's Selectronic Imprinter; Systematics Model C-749 Tape-to-Card Converter; Copy Craft's Ormig Electronic Line Selector; Royal McBee's L-30 electronic computer; and National Cash Register's Post-tronic.









Efficient data handling requires the use of reliable machines and systems. Shown, from top to bottom, are William A. Raub's Punchwriter; Clary's Scanning Printer; Dennison's Print Punch Machine; Addressograph-Multigraph's Model 12-19 Imprinter; and Minneapolis-Honeywell's Honeywell 800, a medium-scale, all transistorized electronic data processing system.

the other hand, all of the equipment used in it may be controlled by automatic external means. Usually, however, a certain amount of automation is found in an IDP system.

It is understandable that there should be a great deal of confusion about the new developments in data handling when two of the basic terms—"integrated" and "automated"—are relative, rather than specific, in their application, and when another—"electronic" is so often misapplied.

The word, "electronic" originally was used to describe equipment which depends upon the use of vacuum tubes, or on some modern substitute for vacuum tubes, such as transistors. However, it is considered a kind of magic word today, and as such, is often used erroneously to describe many kinds of equipment which should rightfully be described simply as "electric" or "electrical."

Consequently, a phrase such as "electonic data processing" cannot legitimately be applied to systems which use electrical equipment only. Data processing is not electronic unless it involves the use of vacuum tubes, transistors, and the like. And since the field of truly electronic office equipment is fairly narrow, electronic data processing almost always implies the use of an electronic computer. There are many instances of integrated, and even automated data processing, which do not require the use of electronic equipment.

Therefore, if the foregoing definitions are acceptable, it appears that data processing may be either integrated or automated, or both, and at the same time may or may not contain electronic components. The terms often overlap, but not by definition.

As mentioned previously, the basic principle of integrated data processing is the automatic perpetuation of repetitive data. Therefore, information entered into a system must be entered in a form which permits it to be repeated, where necessary, without human intervention.

By definition, IDP does not require complex equipment, although high-powered equipment may be used. Actually, the means of preserving data in a form for automatic repetition can be fairly simple. Such basic materials as carbon paper and duplicating masters can be used for this express purpose in certain situations.

However, such information can be preserved by transforming it into a form which can be read by a machine. The most familiar example in discussions of IDP is punched paper tape. Its uses are varied:

It may be fed into a tape-to-card converter, so that information in it can be entered into punched card form for use in punched card accounting. Or it may be converted into another common language.

It may be used entirely within one office, or, through use of wire or radio, may be transmitted to other offices at great distances from the original source.

It may be used simply to distribute information, or it can serve as input to calculating equipment, including large electronic computers. In some cases, it is first necessary to convert it into another form, but this can be done automatically, too.

The agent for integration—and in this case for automation, also—is the punched tape which controls the various machines in the system automatically. Such a system does not necessarily have to be complicated or elaborate, as many recent articles in this magazine have pointed out. An IDP system is certainly not confined only to large offices.

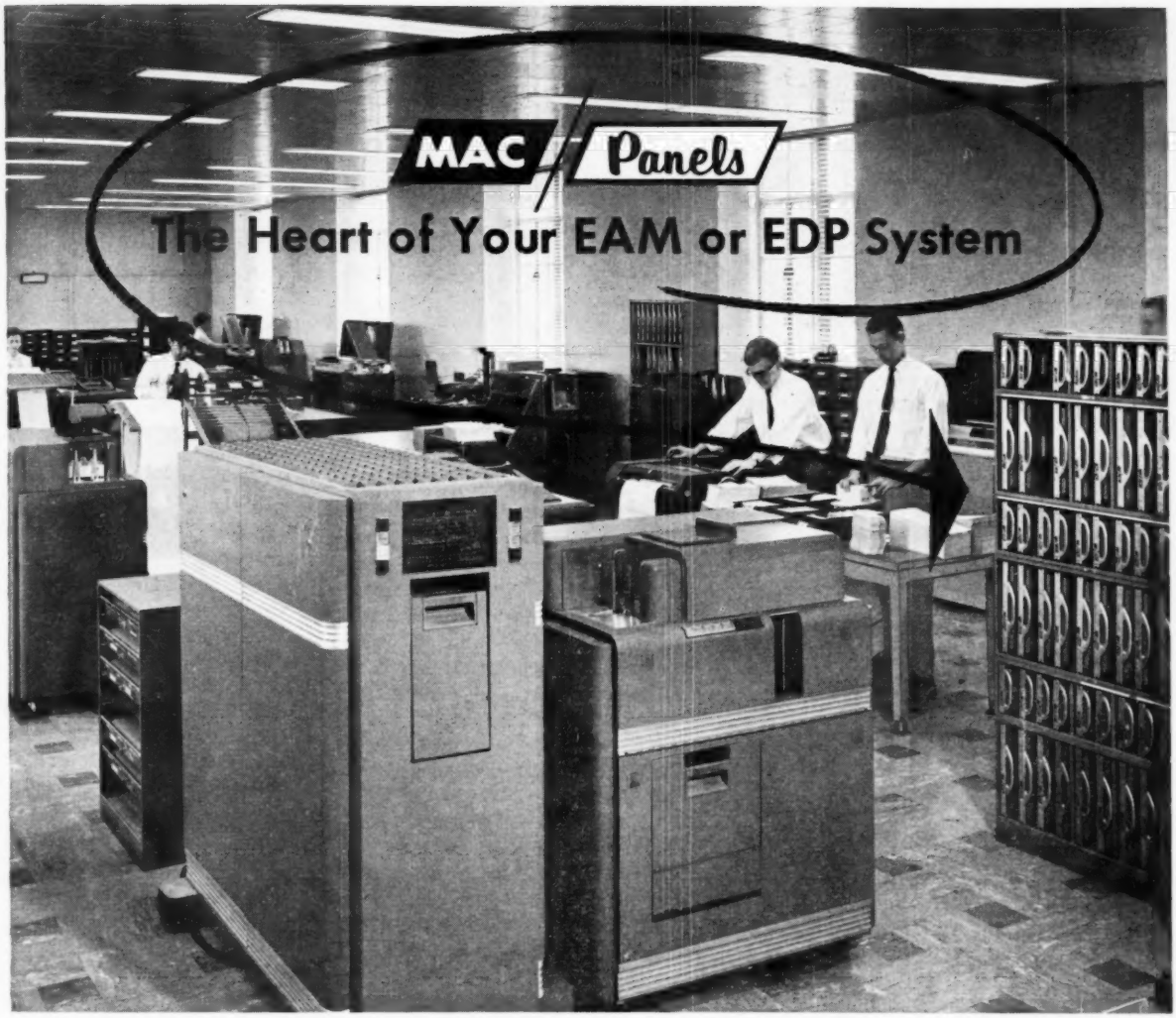
Common language offers advantages

The use of a common language presents several advantages:

First, since it can be used to give automatic control, certain types of systems can produce more work than they could before. However, this does not necessarily imply a reduction in the cost of operations, for the skilled labor required is usually more highly paid, and the equipment is usually expensive. On the other hand, some installations can bring real savings in clerical costs, and others make possible the performance of work which could not be handled efficiently without considerably enlarging the payroll of the company.

Secondly, machine accuracy is very high. Consequently, if information entered into an IDP system is accurate in the first place, the possibilities of errors made in transmission, posting, or figuring are reduced by a large degree. Increases in accuracy not only reduce losses due to errors, but also do away with a great many of the steps otherwise required to verify the accuracy of the information.

Lastly, many integrated systems al-



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low instructions to a machine to be determined prior to the receipt of data. The machine, therefore, can be programmed, so that when data are received it can perform the necessary operations without additional instruction. Electronic computers, especially, may be programmed to handle complex sequences of operations, and provisions can be made for handling exceptions to routines that otherwise require treatment on an individual basis. This handling of exceptions is the costly part of many bulk operations, since isolating and handling exceptions disrupts high-speed routines, and usually requires the exercise of human study and judgment. Many exceptions, however, can either be handled directly by a computer, or at least automatically pulled from the data flow so that human aid may be called upon.

A vast amount of data may be processed by computers because of their amazing calculating speeds. The speed of the computer is far greater than that of any machine which can supply the data.

Thus, to use a computer efficiently for large-scale data processing, it is necessary to employ some method for accumulating large volumes of data.

This can be accomplished by accumulating data while the computer is not in use, a method which is not economically satisfactory for a company which cannot use the computer in the meanwhile for something else. It is, however, a suitable method for companies that do not own computers; data can be processed by a computer at a service center outside the company.

The usual method of supplying a sufficient quantity of data to warrant keeping a computer on the premises is to use a whole battery of inputs. Data can be recorded at many different points in the system. If the company has a really large office operation, such as may be found in typical insurance companies, there is usually a sufficient volume of work to keep a large computer in operation.

Ideally, information should be put into machine-sensible form as soon as it develops; for example, sales data should be recorded in a common language directly at the time and place of sale. It is for this reason that cash registers have been fitted with tape punching accessories, and merchandise has been tagged with pre-punched tags carrying information about the merchandise in coded form.

It appears obvious that as the sources of the data become more and more removed from the data processing facilities, the greater will be the number of data recording units required, and the more extensive the communication network.

This then becomes a problem in economics since both the data recorders and the communications facilities cost money. Consequently, a great deal has been and is being done to reduce the cost of the original entry of data at the beginning points.

Various types of machinery available

Various types of machinery are now available with facilities for punching tapes or cards. Cash registers, merchandise tag readers, and typewriters have been mentioned. Also available are adding and calculating machines, bookkeeping and accounting machines, and other equipment which can produce a complete common language record as a by-product of some necessary operation. Therefore, a typewriter or teletypewriter may be used in preparing a sales order which is used and filed in the normal manner, punching simultaneously a by-product tape which can be used to transmit the same information to other parts of the data processing system.

Ideally, this recording should occur as part of an operation which is necessary in any case, such as typing a sales order. Frequently, however, it is necessary to use a keyboard of some kind to enter data into the system directly, since at times this is the only method available. Numerous types of equipment are available for this purpose, including adding machines and typewriters.

A further link which is sometimes necessary is equipment to convert one common language into another. Here too, there are a number of different types of equipment available to make exchanges of information among such diverse common language media as magnetic tape, punched cards, punched tape, magnetic codes on paper documents, and printed characters which are designed to be read by character recognition devices.

Another method introduced recently to reduce the costs of data origination involves printing a special four-channel numerical code mechanically as a by-product of standard adding, calculating, bookkeeping, accounting and other office machines. This system operates by a method of purely mechanical linkage with the working parts of these machines. The code is printed on a narrow paper tape, and it can be converted to standard punched tape or punched cards through a process of photoelectric scanning in which the punch responds to the tape's light and dark areas. Thus, printed tape becomes another in the list of common languages. It is thinner than standard punched tape since, not being perforated, it requires less paper strength.

Standard punched paper tape is now conventional common language for much IDP equipment and may be used in systems employing codes up to eight channels. Modified, the codes may be punched along the edge of a card, allowing differences in handling. Each of these forms of tape has the advantages of compactness, and ease of cutting and splicing. They are generally convenient to handle and relatively inexpensive, but are not so flexible as punched cards for uses that require sorting of individual records. However, when necessary, they can be converted to punched cards.

Punched cards have long been familiar, and like paper tapes, they are relatively inexpensive. Although they are bulkier than the tapes, they permit greater facility in sorting and unitized handling.

Magnetic tape is used largely within electronic computer systems, where it is employed as the common language medium between components of the system. It permits input and output of data at enormous speeds; and this, together with its great compactness, makes its advantages truly two-fold. It is more expensive than other media, but coded information can be erased and replaced with new data practically without limit. So far, it has not been considered feasible to use it in recording source data at points remote from the computer. However, recently, magnetic coding on paper documents has been developed to a considerable degree. The recording of codes on the face of a check, for example, or the use of equipment using documents carrying magnetic strips on the reverse (on which coded information can be recorded) are some of the new developments. Since the codes are supplementary to printed data, they may be used with regular documents.

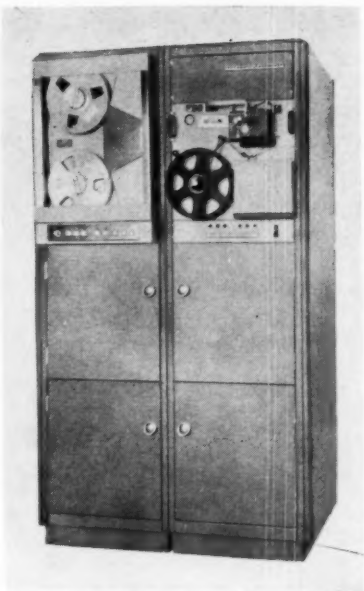
The above illustrates a Distributape Converter by Monroe Calculating Co.

Magnetic codes then may be developed in several forms. Codes which are equivalent to the codes used on magnetic tapes may be printed directly on business forms. They can be printed invisibly, for the use of machines only, or with magnetic ink, for visual inspection when needed, as well as for machine handling.

Or, magnetic principles may be used in combination with the principle of photoelectric scanning of printed characters. This latter method makes it possible for machines to "read" printed material. Usually referred to as "character recognition," this technique is strictly visual, and may be used in special cases when the printed symbols are standardized as to type and registration so that they can be compared with symbols stored in the reading machine; the printed characters are "read" by comparing them with the stored symbols. Such equipment may punch cards with information corresponding to that read.

New technological developments in office automation have also increased in the area of communications facilities. The fact that existing wire facilities were designed to handle five-channel codes has been a major problem here. However, it has now been determined that codes with up to eight channels are more suitable for certain kinds of work, especially in making inputs to electronic computers. By the same token, high-speed transmission of data directly between privately owned data processing units is becoming common.

Other approaches to data transmission are constantly being refined. For



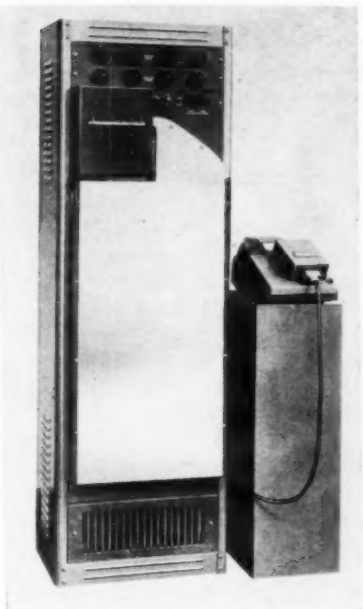
An aid to office systems is the above Digitronics D101 Converter

example, automatic switching service is available for conventional wire services so that messages containing a routine code may be directed automatically at relay stations into the proper channels for retransmission — and, upon request, even into specified receiving units. This latter development means that data can be sorted out automatically on arrival, as in the case of sales information, which may be recorded on one machine, and payroll information on another.

Other technical advances developed

Another technical advance has been the development of improved methods for obtaining what is termed "random access" to data stored in a system. Almost without exception, data processing in large offices has required the accumulation of data of a given type and summarization of that information before applying it analytically. For instance, the total sales of a given product during a specific period of time would be summarized and the total subtracted from inventory figures or added to sales figures in one of their various breakdowns, or otherwise applied to existing summary records. Since access to the records was burdensome and inefficient, it had not been feasible to post each individual transaction to these summary records. Thus, similar items were usually batched.

The batching process generally results in a time lag between a trans-



Above is new transistorized system, called Victor Class 100

action and the evidence of its effect on the summary record, such as inventory. It is possible to determine within a shorter period when the time has arrived to reorder if inventory records can be kept current. If the company can count on knowing immediately when stocks are low, it can rely on this information to avoid the need for maintaining larger inventory to cover possible errors in estimated sales.

Hopes of being able to post each transaction as it occurs are moving toward reality. Recent developments have been made to facilitate such a process. New types of random access equipment permit the operator of an electronic system to enter the data from each transaction as they occur into summary records. This is made possible by means of reaching, in rapid-fire order, the applicable portions of the records stored in the equipment. "In-line" processing, in which all records affected by a transaction are posted individually and at once, is becoming more and more feasible as new developments continue.

Some types of random access equipment use a series of short magnetic tapes; some employ storage on magnetic drums; and others employ a series of magnetic discs. Since the search for data can at once be limited to that particular tape, portion of the drum, or the disc containing the data, it is no longer necessary to search the

entire memory. This in-line processing which supplies management with valuable up-to-the-minute data is now available in many operations.

One established concept today is that successful integrated data processing is not possible without extensive systems study and revision before installing the machinery. The necessity for a systems analysis is considered imperative by those who have been closest to the subject. The emphasis placed upon the systems approach is perhaps the most significant development of the times, since it is the efficiency of the office that matters, more than the particular equipment obtained.

New equipment makes possible the development of new systems, or at any rate, makes it possible for the smaller company to use systems which were previously disregarded because of the expenses involved. This is the reason why many manufacturers have concentrated on medium- and small-size equipment designed particularly for the smaller organization.

Technicians are designing component parts of less weight and bulk than were produced previously. The use of transistors and other similar devices to replace the vacuum tube is one example of this. "Solid-state" is the term used to describe computers of this type. Naturally, as the equipment becomes more compact, less space is required to accommodate it, and less structural support is necessary for its lighter weight. Also, it uses less current, and as a result requires less air conditioning apparatus to control the heat which it generates. This naturally causes maintenance and installation costs to be greatly reduced. Technicians are also concentrating upon computers of modular design so that the machines may be easily modernized with each new development.

The growing possibilities presented by automation have extended out of the world of science fiction and into reality. In fact, the true-life functions of such machines may prove to be far more startling than anything ever imagined in literature. There is in existence now, the blueprint for a machine which is capable of reproducing itself.

Included in the list that follows is a variety of equipment on the market. Such equipment is, of course, extremely extensive and varied in application and the accompanying descriptions offered do not attempt to cover the technical details which distinguish one machine from another (or the possible combinations of equipment into office systems). Basically, the list is designed to serve as a guide for those who wish to enter into further research on automated equipment and systems.

The Manufacturers

Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 17. Company has several products used in automated office procedures: Multilith Offset Model 1278 is almost completely automated unit for encoding, serially numbering, and personalizing bank checks; Addressograph Model 9302 Scanning Punch automatically scans bar code and punches tabulating cards; Graphotype Class 6700 operates automatically from common language perforated tape; Transfer Printer Model 831 is unit which is able to pick an item at a time from vertically listed form, and reproduce this item on individual cards, envelopes, and similar unit forms.

Shortly to be released for general sale are certain new models in the line of Addressograph Imprinters which, in a single motion, will imprint from plastic cards both alpha-numeric and bar code data on invoices and other originating forms.

Airborne Instruments Laboratory, Inc., Modac Div., Old Country Rd., Mineola, N. Y. Firm has produced line of Modac electronic data processing systems in the $100,000 price range, custom built, including computers and card-to-tape converters.

Alwac Computer Division, 13040 S. Cerise Ave., Hawthorne, Calif. Company was previously known as Logistics Research, Inc., and offers a general purpose digital electronic computer, the Alwac III E, in $100,000 price range.

American Telephone and Telegraph Co., 195 Broadway, New York 7. Data-Phone is a Bell System service which makes it possible to transmit data or text in any machine language over regular telephone lines at speeds currently up to the equivalent of 800 words per minute. Data-Phone service makes use of special devices or "subsets," provided by the Telephone Companies, which "condition" the information so that it may be transmitted over the telephone connection. This "conditioning" consists of converting the electrical pulses of data received from originating equipment (card readers, tape readers, tabulators, etc.) to audible tones for transmission over telephone lines. At the receiving end, the reverse of the function is performed. The equipment reconverts the tones into electrical impulses and delivers the data to business machines.

Ampex Corp., Instrumentation Division, 934 Charter St., Redwood City, Calif. Firm manufactures magnetic tape transport equipment, including heads and read/write/translator electronics for use as input/output devices in electronic computers and other specialized digital systems. Firm also manufactures and markets computer tape.

ANelex Corp., 150 Causeway St., Boston 14. Company produces high-speed printers for high-speed printing with inputs from punched tape, punched cards, magnetic tape, or magnetic drums. Printers have speeds of up to 2,000 lines per minute of numeric data and 1,200 lines per minute of alpha-numeric data. Also, ANelex Print Station, which is off-line installation consisting of magnetic tape handler fed from previously prepared computer tape, a print and format controller (which combines functions of data distribution, storage, timing, and energizing), and a data printer which provides high-speed data printing at normal rate of 1,000 lines per minute.

Bell Telephone Laboratories, 463 West St., New York 14. Research and development work for the Bell System. (See listing under American Telephone & Telegraph Co.)

Bendix Computer Div., Bendix Aviation Corp., 5630 Arbor Vitae St., Los Angeles 45. Firm has manufactured G-15 general purpose digital computer in the $50,000 class, designed for engineering and scientific work; also has business units using punched card and/or punched tape input. Special feature allows computation while input and/or output operations are in process. Alpha-numeric paper tape converter may be used for integration with systems using 5-, 6-, 7- and 8-level codes.

Burroughs Corp., 6071 Second Avenue, Detroit 32. Burroughs Corp. offers three electronic digital computer systems: desk-size E 101, medium-scale 205, and intermediate-scale 220.

The E 101, which features simple, external pinboard programming, stores data on a 220-word-capacity magnetic

Henry F. Zartl, Manager, Teletype Dept., The DoALL Company, Des Plaines, Illinois

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drum memory. Keyboard input may be augmented by 80-column cards and standard, commercial 5- and 8-channel paper tape. Output is to semi-ganged printer, with optional facility for paper tape. A general-purpose computer, the E101 has been used to calculate loan accrual, interest and insurance rate tables, and for transportation billing as well as for a wide range of engineering calculations. Eight pinboards offer 128 program steps which may be expanded by instructions entered from punched cards or paper tape. Basic repertoire consists of 29 single-address commands. Additional programming features include two address-modification counters, an unconditional, and two conditional transfer instructions.

The Burroughs 205 is a medium-scale electronic data processing system. Input is through keyboard, punched cards or perforated paper tape. Output is to electric typewriter, punched card, paper tape or line printer. The general-purpose, decimal-digit 205 stores data and instructions on a 4,800-word magnetic drum. Auxiliary magnetic tape storage is available in up to 10-reel or multiple-tape Datafile units, in any combination. Maximum capacity of this magnetic tape storage system is 200-million digits. The Burroughs 205 Cardatron permits high-speed communication between the computer and up to seven 80-column card readers, punches or line printers, in any combination—offering flexible automatic editing and format control for alphanumeric input and output information. The basic internal language of the computer—1-2-4-8 binary-coded decimal—is common to both magnetic and paper tapes. Input/output translation between this code and 80-column cards is automatically controlled by Cardatron. Applications for the 205 cover the complete range of commercial, engineering, and scientific computation problems. Purchase price for an average 205 system is around $250,000.

The Burroughs 220 is an integrated, general-purpose electronic data processing system featuring a basic magnetic core memory of 2,000 words, which may be expanded to a maximum 10,000 words in increments of 1,000. Input is through paper tape (at 1,000 characters per second), punched cards, or keyboard. Output is to paper tape, card punch, line printer, or high-speed printer. The Burroughs 220 High-Speed Printer System will accept information directly from the 220 Data Processor, or it may be fed off-line from magnetic tape, at speeds up to 1,500 lines per minute. A plugboard provides for complete, flexible format control for 120 print positions. The internal language of the Burroughs 220—1-2-4-8 binary-coded decimal—is common to both magnetic and paper tapes, although the paper tape utilizes a 7-channel code which permits single-frame representation of alphabetic information. Translation between the internal and 80-column card codes is automatically controlled by the Burroughs 220 Cardatron System, which provides high-speed communication between the Data Processor and up to seven card readers, punches, and line printers, in any combination. The Burroughs 220 auxiliary magnetic tape storage system permits up to 10 reel and multiple-tape Datafile units in any combination. Maximum magnetic tape system capacity is 500-million digits, with a maximum information transfer rate of 25,000 characters per second. Purchase price for an average Burroughs 220 system is about $500,000.

The Burroughs F5212 Dual Printer Sensimatic is a new machine specifically designed for banks that allows simultaneous and original printing on a combined ledger and statement form with conventional bookkeeping equipment. It incorporates such features as automatic balances, multiple-total adding and subtracting, electric column selection, simplified data input, correction control, automatic four-digit check count and an automatic account counter.

New in the Burroughs MICR (Magnetic Ink Character Recognition) automation program for banks are the new Burroughs Magnetic Character Sorter, which sorts checks at rates of over 1,500 items per minute; and an electronic bank bookkeeping machine with automatic statement processing. Upon command from the bookkeeping machine, the selector electronically searches out any desired statement from a stack of statement forms placed in the selector feeding tray and inserts it into the carriage of the bookkeeping machine without human assistance. On completion of posting it returns the form to a stacker in proper sequence.

A new desk-model bookkeeping machine, style P612, has recently been placed on the market by Burroughs. The machine is designed to put highly automatic mechanized accounting within the reach of small business.

Also, Burroughs Sensimatic Typing Data Processing equipment.

Clary Corp., 408 Junipero St., San Gabriel, Calif. Firm has developed an electronic scanning printer which works directly from logical levels and has a keyboard for supplemental data entry. Called the Clary Model 1961, the scanning printer has 12-digit decoding and printing capacity for electronically controlled data from both decimal and binary-coded decimal sources. Typical applications include missile checkout systems, engineering-analysis equipment, electronic component checkout systems, and quality control evaluation stations.

Firm also has an electronic computing machine (ECM), which is a completely transistorized unit built into a standard office desk. Computations are performed by electronic unit in drawer section of desk; results are printed automatically on adding machine-type print unit mounted flush with desk top. ECM consists of 4 desk-mounted units connected by cable—key entry unit; electronic computation unit; programming unit; and printing unit. Operations are performed by computation unit either under manual or program panel control. Present models provide for 30 program stops. It is priced at $15,000 FOB, San Gabriel. Certain of the company's standard adding machines and cash registers can be equipped to punch paper tape as a by-product of normal functioning. Clary also offers a variety of machines designed to read codes for automatic input to electronic systems.

Copy-Craft, Inc., 105 Chambers St., New York 7, N. Y. The Ormig Selective Data Printer is a machine which selects, eliminates, condenses, and shifts lines, columns, and headings from one master without masks, blockouts, strip masters or shingled forms. It produces from a given master all information on that master, or selected data condensed on single item tickets. Machine advances automatically from line to line; job tickets, each of which describes a different operation and bears certain data common to the entire job, may be produced in tailor-made series.

The new Ormig Electronic performs the same functions as the Selective Data Printer, and allows the selection electronically from a master of any number of lines in any combination desired.

Cummins-Chicago Corp., 4740 N. Ravenswood, Chicago 40. Company has manufactured Perf-O-Data equipment which encodes documents by perforation; the Perf-O-Reader (character-scanning unit) scans the perforated characters by means of a photoelectric reading device. Other equipment includes an auxiliary keyboard which provides for manual entry of variable information or corrections.

Dage Television Div., Thompson Ramo Wooldridge, Inc., Michigan City, Indiana. Firm has made line of closed circuit television equipment which is used in some automatic systems to speed exchange of visual information, as in verifying signatures on documents.

New Dial-Data system provides instantaneous access to visual data. Heart of system is a "data console" equipped with a special closed-circuit TV camera. Console contains a rack holding 25 slide frames of records, files, information, sheets, schedules or other constantly changing data. Automatic dial equipment determines which frame is placed before the camera, and thus, what information is sent over the system. Individual dials at each monitor permit the user to dial for visual information as easily as making a telephone call. "Dial-Data" system installations begin at $15,500.

Dashew Business Machines, Inc., 5996 Smiley Drive, Culver City, Calif. The firm has manufactured equipment providing original entry of data into automatic systems. Dashaplate, a basic source of data, is an embossed plate of metal or plastic, carrying basic information. Plates can be created at rate of 6,000 an hour by Databossers (controlled by punched tapes or cards), or manually on Datatypers.

Datamatic Corp., 151 Needham St., Newton Highlands 51, Mass. See listing under Minneapolis Honeywell.

Dennison Mfg. Co., 300 Howard St., Framington, Mass. Firm has Print-Punch marking machines which are used to prepare merchandise tags for subsequent automatic processing. The machines punch basic merchandise data in four- or five-channel code, and simultaneously print information (such as size, price, style number, etc.) that can be read easily by customer and sales clerk. Printing and punching rate is 200 stubs per minute.

Allen B. Du Mont Laboratories, Inc., 750 Bloomfield Ave., Clifton, N. J. Although not IDP equipment, the Du Mont line of closed circuit television has applications in data handling systems since it can provide instantaneous visual transmission of information. The line includes a variety of components designed to be integrated interchangeably into the system.

Pictured above is Burroughs 220 Electronic Data Processing System

Digitronics Corp., Albertson Ave., Albertson, Long Island, N. Y. Firm makes Dykor Auxiliary Tape Processing Equipment for off-line testing, editing, copying, interrogation, and translation of magnetic files. Basic circuitry employed in equipment is based on solid state transistorized components. In order of increasing complexity, the Dykor modules build up to form: first, the tape testing device; second, the interrogation device; third, the copying device; fourth, the editing device; and fifth, the translation device. Cost of complete system is $56,500.

Dykor D101 Converter is magnetic tape to teletype converter. It translates and edits data from any computer, wherein the code is 7-bit parallel and serial by character, to its corresponding form on standard teletype paper tape. Magnetic tape data is accepted by the D101 Converter. The conversion operation is manually initiated but proceeds automatically thereafter until the end of the input tape data. Editing and format control is automatically assured by a plugboard which permits insertion of carriage returns, line feeds, etc., as well as skips, zero suppression, column splits, and translation of characters based on memory position. Plugboard can be designed for the special requirements of the purchaser. Construction uses printed circuit plugboards; self-checking facilities are incorporated in the circuits. Control and front panel lights make possible rapid location of malfunction. General price range is from $60,000 to $70,000.

Electronic multipliers are designed to extend the utility of standard Addressograph-Multigraph business equipment by providing five electronically selected 6-digit multipliers to multiply an 8-digit multiplicand. Equipment automatically reads the multiplicand from the addressograph plate. It automatically selects one of the five multipliers and automatically reads out product. It features manual selection of decimal positioning, roundoff, and nine of fourteen available product digits. Built-in self-check is performed by having each multiplication repeated with the operation reversed and the product compared.

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. Company has collaborated with Addressograph-Multigraph in special purpose electronic data processing systems for mailing operations. Inputs are from punched cards with conversion to magnetic tape and printing out of addresses at rates to 45,000 an hour.

The Kodak Minicard System is an ultra high-speed information handling system which records documents, pictures, or other information photographically on tiny pieces of film about the size of a postage stamp. Through the use of electronic controls, the Minicard system can be utilized to retrieve any desired information by searching the Minicard film records automatically at speeds of up to 1,000 frames a minute. New system combines advantages of microfilm, punched cards, and digital computing techniques.

Also, a new portable Verifax book copying unit with "photographic mind" capable of reproducing any type of printed page.

Electronic Associates, Inc., Princeton Computation Center, Long Branch, N. J. Company has made analog computers, designed primarily for scientific and engineering work. The Dataplotter takes data from punched cards or

punched paper tapes and plots this information in continuous-line graphs. In this manner, data from electronic computers are put into graphic form.

Electronics Corp. of America, 10 Potter St., Cambridge 42, Mass. This company has produced a series of Magnefiles, desk-size electronic units, for maintaining perpetual inventory information with various inputs. Computation facilities are also offered.

Farrington Mfg. Co., Industrial Center, Needham Heights, Mass. Company has general and special purpose high-speed, optical-scanning (alpha-numeric readings) machine and associated identification and imprinting equipment for commercial data handling application.

Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20. Company has high speed tape readers with speeds of 200 and 400 characters a second which are used to convert codes in punched tape for input to computers and for similar uses. Tape reading and control are accomplished by photoelectric means. Friction drive is used. New high speed tape reader type TR7 is self-contained free standing unit capable of "reading" 5, 7, or 8 level tape at any speed up to 1,000 characters per second. A fast rewind is also provided giving less than 30 seconds rewind time for 1,200 feet of tape. Reader operates under either computer or manual control and will read character by character at high speed. Unit includes spooling, photo-sensing head, amplifiers, control circuits and power supplies, all fully transistorized. Special feature is built-in checking facility.

Company has also manufactured two electronic computers (intended primarily for scientific work).

Fisher & Porter Co., Hatboro, Pa. Firm has made a line of data reduction equipment for industrial application, used for readout from manufacturing processes.

Wm. A. Force Co., Inc., 220 Nichols Ave., Brooklyn 8, N. Y. Firm has made a numbering machine for electronic data processing which prints dots, dashes, or specially shaped figures instead of conventional numerals. Code markings, representing serial numbers, are printed on documents like checks, order forms, and other commercial papers processed by electronic scanning. A Convex 5-Channel Tape Coder is used on rotary printing presses to print dots corresponding to consecutive serial numbers, simulating 5-channel tape. The codes are intended for use as inputs to IDP systems.

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. Company manufactures Friden Flexowriter, an automatic writing machine. Latest models operate automatically from tape, edge-cards, or tab cards, and produce one or more by-product tapes or cause simultaneous punching of tab cards. New Model CTS Computyper is an automatic billing machine, tape-operated and tape-producing. It also reads and causes simultaneous tab card punching. Machine has interchangeable program panel and actuator racks, and requires only a typist for operation. Selectadata is a tape reader-selector-sorter which swiftly searches punched tape for predetermined data, then causes readout by Flexowriters or Computypers. In an automatic billing application, for example, Selectadata may select and cause printing of date, order number, and individual items. Another billing machine, Model B Computyper, is operated by typist, and takes price and quantity inputs from keyboard, computes and prints results automatically. Teledata is a tape transmitter-receiver with built-in accuracy check for 5-, 6-, 7-, or 8-channel tape transmission. It is used at the ends of communication channels to transmit coded information contained in punched tape to a receiving location where an identical tape is repunched. Friden also makes Solenoid Input Adding Machine (Model ABS), Solenoid Input Printer (Model PRS), Adding Machine with Electrical Output (Model AAEO), Adding Machine with Electrical Output and Solenoid Input (Model AAEOS), Solenoid Input Add-Punch (Model APTS). The Friden Add-Punch produces punched tape and conventional listing simultaneously. Input is from 10-key adding machine keyboard.

General Dynamics, Stromberg-Carlson Division, San Diego, 1895 Hanson St., San Diego 12, Calif. Firm has S-C 5000 Series of High-Speed Electronic Printers. S-C 5200 Registration Printers are specially designed for commercial applications requiring close tolerance registration of computer data on pre-printed forms. Prints up to 5,000 lines per minute.

General Electric Co., Computer Dept., Phoenix, Ariz. Company has recently developed the 312 Control Computer System for data processing. Unit uses punched paper tape input and electric typewriter output.

Intelligent Machines Research Corp., Subsidiary of Farrington Manufacturing Co., 7019 Edsall Rd., Alexandria, Va. Firm has produced equipment which reads printed characters, both alphabetic and numeric.

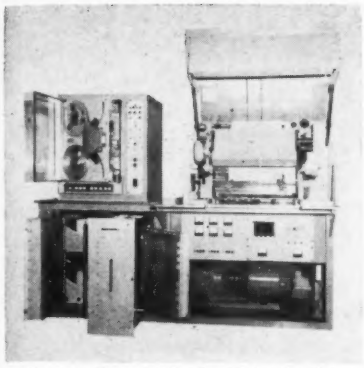
Haloid Xerox, Inc., 6 Haloid St., Rochester 3, New York. Company has manufactured "print-out" systems including the SC-5000 which can print at rate of 10,000 characters per second, using the xerographic process, a dry, electrostatic means of forming image on-line signals, from magnetic tape or from light transmissions. System is composed of the Charactron Beam Tube, and the Haloid Company's Xerox Copyflo Printer. Also, Xerox Copyflo Continuous Printers which, from original documents or microfilm, produce at rate of 20 feet of print per minute an 8½ by 11 inch print in less than 3 seconds.

Company also has recently developed a high-intensity opaque projection system through a new application of xerography. Called PROXI, (Projection by Reflection Optics of Xerographic Images), the new system provides unusually brilliant, flicker-free displays of images produced by xerography from opaque subjects, microfilm, or cathode ray tubes.

Intelex Systems Incorporated, 67 Broad Street, New York 6, N. Y. An Associate of ITT engaged in providing systems for the electronic control of repetitive clerical processes and supplying input and output equipment for data processing systems, such as high speed teleprinters, tape punches, electro-mechanical and photo-electric tape readers. The new light-weight Creed Model Seventy-five Teleprinter operates at 100 words per minute. It is generally used as an input and output device for integrated data processing systems.

Creed Model 3000 Punch is an ultra high-speed paper punch for direct recording of five to eight tracks of output computer digital information at speeds of up to 300 characters per second—3,000 words per minute. The punch operates on a multiwire start-stop basis incorporating revertive signalling arrangement for input control.

International Business Machines Corp., Data Processing Division, 112 East Post Road, White Plains, N. Y.



Shown above is Anelex Print Station

Firm produces a series of data processing systems in various capacities and sizes including, Small Data Processing Systems: IBM 604 Electronic Calculating Punch, electronic computer for general-purpose computation. Monthly rental; $550 to $735. Selling price, $25,900 to $34,000; IBM 607 Electronic Calculator, electronic computer for general purpose computation; $800-$960 and up, monthly rental price; $37,500-$46,500 and up, selling price. IBM 610 Automatic Decimal Point Computer, self-contained mobile computer designed for programming ease; $1,150, monthly rental; $55,000, selling price. Medium-sized Data Processing Systems: IBM RAMAC 305 (random access method of accounting and control) is system built around a disc memory unit which consists of 50 magnetic metal discs.

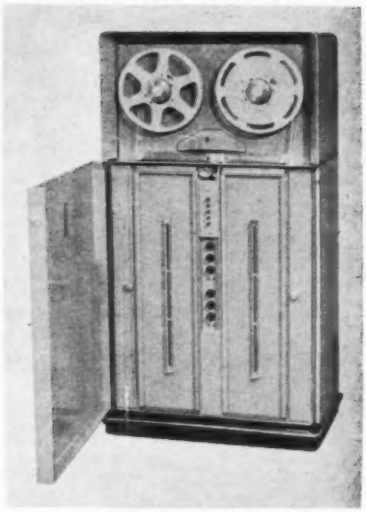
It has arithmetical and logical processing ability, punched card input, and both punched card and printed output. Optional features include punched paper tape input, remote printing stations, dual disc files, dual access arms, dual system control, and flexible printing. Monthly rental with punched card output is $2,875 and up; with printed output, $3,200 and up. Selling price with punched card output is $167,850 and up; with printed output, $189,950 and up; IBM 650 Data Processing System, for general-purpose computation. Basic system uses punched card input and output, and additional units can be incorporated to provide magnetic tape input and output, printer output, paper tape input, magnetic core storage, and disc storage with random access and direct interrogation. Monthly rental is $3,750 and up. Selling price is $182,400 and up. Large Scale Data Processing Systems: IBM 704 Data Processing System is composed of interconnected units, designed primarily

Eastman Kodak's Verifax Viscount

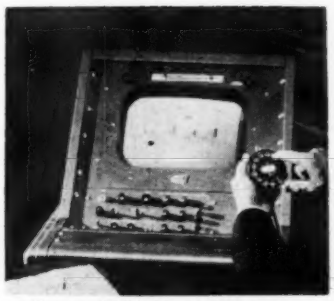
for scientific computation. Heart of system is high-speed magnetic core storage. Monthly rental is $44,000 and up. Selling price is $1,994,000 and up. IBM 705 Data Processing System is composed of interconnected units designed primarily for business calculations with 20,000 positions in magnetic core "memory." Magnetic drums and magnetic tapes are used for additional storage. Monthly rental for an average system is $35,000 and up. Selling price for an average system is $1,713,000 and up.

IBM 705-III Data processing System is similar to earlier 705 systems but includes ultra high-speed tape unit, IBM 729 Model 3, which can write at a rate of 62,500 characters per second, automatically checking validity and readability. System also includes IBM 767 Data Synchronizer which controls magnetic tape input and output so that computer can read problem data, compute, and write answers simultaneously. Monthly rental is $38,500 and up. Selling price is $1,925,000 and up. IBM 7090 Data Processing System is fully-transistorized version of the 709 with improved synchronization of data transmission to and from input-output devices. Used for both business and scientific problems, system can read, write, and compute simultaneously, and can use up to eighty tape units, eight card readers, eight card punches and eight printers. Monthly rental for typical system is $64,000. Selling price for typical system is $2,880,000.

IBM 7070 Data Processing System is fully-transistorized high-speed data processing system utilizing modular, or "building-block" construction. The 7070 ranges in capability between medium and large-scale systems, depending on the number and types of units included. System is used for



Ferranti Tape Reader, Type TR7



Dage's "Dial-Data" TV system

business and scientific problems. Monthly rental for typical system is $20,350. Selling price for typical system is $900,500. IBM Series 1200 Character Sensing Equipment is new electronic system for the automatic handling of bank checks. Equipment makes use of an arabic character "common language" which can be read by both men and machines. These characters, representing amount, bank number, and other essential data, are imprinted on each check in magnetic ink. Series 1200 equipment reads this information from each check, proves and accumulates totals for all checks being processed, sorts the checks into desired sequence, and posts data directly into an IBM data processing system for a completely automatic check processing operation. System consists of four units: utility inscriber, proof inscriber, sorter-reader, and a control unit.

A complete line of punched card machines including card punches, sorters, accounting machines, interpreters, collators, verifiers, proof machines, data transceivers, the Ticket Converter, the Cardatype Accounting Machines, and others, is produced.

The IBM 740 Cathode Ray Tube Recorder is an electronic output device which provides an output for the recording of data points on the faces of a pair of television-like tubes at the rate of 8,000 per second. Monthly rental is $2,850. Selling price is $112,000.

IBM Typewriter Card Punch (Types 824 and 826) prepares punched cards for accounting use as an automatic by-product of typewriting operations. Monthly rental ranges from $95 to $145. Selling price ranges from $3,700 to $7,400.

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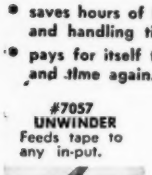
OF PUNCHED TAPE ACCESSORIES

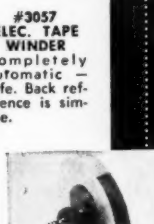
- saves hours of filing and handling time.
- pays for itself time and time again.

#7057 UNWINDER
Feeds tape to any in-put.



#3057 ELEC. TAPE WINDER
Completely automatic — safe. Back reference is simple.

#5057 HIGH SPEED MANUAL TAPE 4-IN-1 WINDER
Save time in winding, reviewing, searching miscellaneous coded tapes. Winds tape at high speed. Oval 4"x6" base, height with 6" reel, 7¼".



Efficiently winds coded paper tape, magnetic or any other tape.

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Use Readers' Inquiry Coupon on Page 80

Punched Tape to Punched Card Conversion Equipment: 884 Typewriter Tape Punch creates a perforated tape simultaneously with the typing operation. Monthly rental $75. Selling price, $3,750. The 47 Tape-to-Card Printing Punch reads alphabetic or numeric information from punched paper tape and converts it to IBM punched cards. Model 1 reads five and eight-channel tape. Model 2 reads eight-channel tape only. Monthly rental prices — Model 1, $160; Model 2, $155. Selling prices, Model 1, $7,200; Model 2, $6,950.

IBM 63 Card-Controlled Tape Punch is used to transmit data automatically by commercial wire services. The 63 reads alphabetical and numerical information in IBM punched cards and perforates five-channel telegraphic tape with these data. Monthly rental, $75. Selling price, $3,600.

IBM 46 Tape-to-Card Punch reads alphabetic or numerical information from a punched paper tape and converts it to IBM punched cards. Monthly rental for Model 1 is $140; for Model 2, $135. Selling price for Model 1 is $6,300; for Model 2, $6,050.

International Standard Trading Corp., 22 Thames St., New York. Firm has made a wide range of communications equipment and is an affiliate of the International Telephone & Telegraph Corp. Included are a variety of typewriter models and related equipment, for many IDP functions.

International Telephone & Telegraph Corp., 67 Broad St., New York. Firm has communications facilities; also, an automatic system for processing bank checks, performing deposit accounting, and related reporting and analysis functions. System will permit rapid electronic and mechanical processing of all checks and documents regardless of type, shape, or size.

The Jacobs Instrument Co., Bethesda 14, Md. Firm has made electronic digital computing equipment.

A. Kimball Co., 444 Fourth Ave., New York 16. Company manufactures the "75" Punch Print Machine for encoding as many as 29 columns of punched and printed data into tickets and tags to serve as automatic input for punched cards and punched paper tape, and as input for integrated data processing systems. Kimball Portable Punch is slide-set and is used for encoding 12 additional columns of variable data in the Kimball Punch Print Ticket. Tag Reader Model KRB converts print-punch tickets at the rate of 100 per minute to standard size tabulating cards for further processing.

Kleinschmidt Laboratories, Inc., Div. of Smith-Corona Marchant, Lake Cook Road, Deerfield, Ill. The company produces a line of teletypewriting equipment for use in communications. The TT-195 High Speed Typing Reperforator punches and prints on paper tape at the rate of 750 words per minute, or 75 characters per second. It is used for receiving coded communications. The firm's line includes teleprinters, transmitting units, typing perforators, and accessory switching and selecting equipment.

Laboratory for Electronics, Inc., Computer Products Div., 1079 Commonwealth Ave., Boston 15. Company's RASTAC system may operate as independent data storage and access device or in conjunction with most standard general-purpose digital computers. It provides mass data storage with minimum random access time, operating independently. In conjunction with general purpose digital computer, it facilitates processing of commercial or scientific data on an in-line basis. It eliminates need for presorting of input data. System consists of from one to thirty-three high-density magnetic file drums, and two cabinets of control and power supplies. Heart of system is HD Magnetic File Drum.

Also SM Generator and Viewer which converts coded data to a visual message.

Librascope, Inc., 1607 Flower St., Glendale 1, Calif. Company has manufactured a small electronic computer.

Litton Industries, 336 N. Foothill Road, Beverly Hills, Calif. This company has made small electronic calculators and other equipment.

Minneapolis-Honeywell Regulator Co., Datamatic Division, 151 Needham St., Newton Highlands 61, Mass. The Honeywell 800 is a medium-scale (expandable to larger scale) data processing system, consisting basically of a central processor, console, five magnetic tape units, a printer, and a card reader. The all-transistorized 800 is a compact, versatile, and competitively priced system which processes a number of jobs simultaneously — each independently programmed and automatically controlled. Automatically controlled parallel processing, as it is

called, is particularly suited to distribution of premium payments, payroll accounting, inventory control, stock transfer account and many other data processing routines pertinent to insurance, industry and banking. System accommodates all types of input equipment although major input medium is punched cards. Central Processor, (heart of system) utilizes multifunction instructions and operates at a speed of 30,000 three-address operations per second. It is specifically designed to attain high speeds for sorting, merging, and file maintenance procedures. System features Orthotronic control, a method of automatic record protection. The system can carry simultaneously both data processing and scientific computation.

Monroe Calculating Machine Co., 555 Mitchell St., Orange, N. J. Synchro-Monroe President is data processing machine which simultaneously punches tape or cards as a by-product of regular accounting jobs such as payroll, accounts payable, accounts receivable, stock record or general ledger. A control chassis contains a simple plug-board arrangement allowing the machine to be programmed in the user's office, should a change in punching requirements arise. A removable encoder board permits choice of 5-, 6-, 7-, or 8-channel tape, or direct connection to an IBM 024-card punch. Machine is designed for flexibility and adaptability to changing needs.

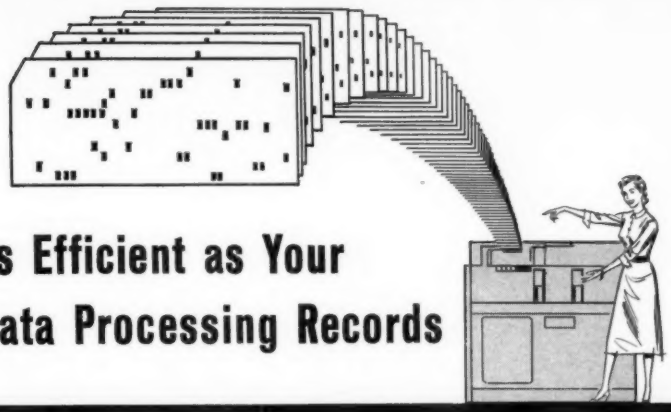
Monrobot LX is desk-size electronic computer designed primarily for billing applications; however, it may be programmed to perform other applications. Price is $9,650; equipment may be rented.

Monroe Distributape System is electronic accounting system designed to speed the accumulation, distribution, and analysis of data for retail stores.

Synchro-Monroe Tabulator is low-cost machine for listing and adding numerical information from punched cards.

Also, Synchro-Monroe adding machines which may be used as regular adding machines or data processing. With latter, they simultaneously and automatically punch amounts into paper tape. Synchro-Monroe direct-to-card adding machines transfer data directly to punched cards.

The National Cash Register Co., Main & K St., Dayton 9, Ohio. NCR offers IDP equipment of several types.



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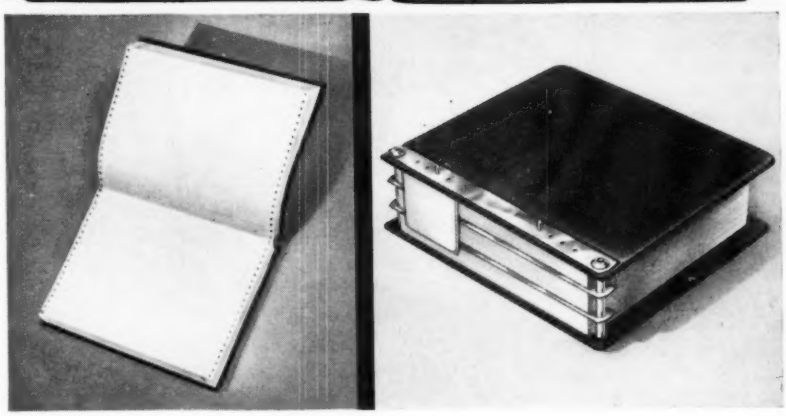
NBB's Storage and Reference Binders for Tab Runs



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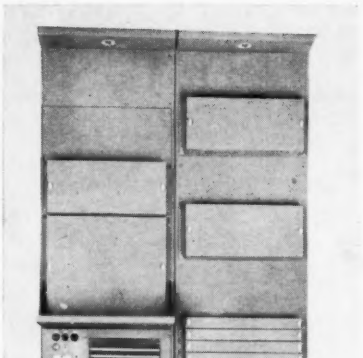


Kleinschmidt's Switching System

New Class 31A is latest machine in NCR line of accounting equipment. It has electrically controlled mechanisms for determining and initiating the proper posting program or automatic machine operations. This feature can eliminate the need for an operator to compare a customer's balance and payments to determine whether he should or should not be mailed a past-due statement. Similarly, the feature can automatically decide that an inventory item should or should not be replenished. The feature can automatically verify the accuracy of balance pickups, cause the pickup errors to be automatically cleared, and the carriage automatically repositioned for making the pickups again. It also features automatic totaling, subtotaling, repeat or date printing, and so on, as the carriage moves in either forward or reverse direction; increased number of automatically controlled selections for both forward and reverse carriage tabulations; and ability to capture data automatically in either punched paper tape or punched card form as a direct by-product of the original posting operation. The 304 Data Processor is a medium size computer which includes such units as a universal converter, high-speed paper tape punch, high-speed printer, tape handlers and controllers, high-speed card reader, and high-speed paper tape recorder.

The National Alpha-Numeric Card Punch Coupler links a National accounting or adding machine to a card punch machine, permitting alphabetical or numerical information to be automatically punched into cards.

Post-Tronic equipment reads magnetic codes on paper documents, and is currently used largely for bank accounting functions.

NCR has also released for sale a complete step-by-step system which automates the handling of checks in commercial banks.

Philco Corp., Government & Industrial Div., 4700 Wissahickon Ave., Philadelphia 44, Pa. The Philco Transac S-2000 is a large scale, ultra high-speed, all-transistor electronic data processing system which is suited to a long range of applications such as file maintenance, payroll, general and cost accounting, inventory control, premium billing, bank deposit bookkeeping, sales order billing, stock transfers, revenue accounting, market analysis and management reports, and a great variety of others. It is available in a wide variety of components and system designs, each component compatible with every other one for maximum speed and reliability. Approximate cost of Transac S-2000 is $1,500,000 and the rental charges are about $31,000 per month. Heart of system is central computer, the actual data processor of system, major components of which are internal storage units and the arithmetic and control sections. These components store the data and instructions, execute the instructions in sequence, and perform arithmetic and logical operations. Main internal storage is high-speed, coincident current, magnetic core memory. Basic size is 4,096 words. Intermediate speed storage is provided by magnetic drums. Has repertoire of over 200 instructions. Accommodates wide variety of input-output media.

Potter Instrument Co., 115 Cutter Mill Road, Great Neck, N. Y. Firm has manufactured components for use in IDP systems, including high-speed printers taking inputs from magnetic tape, punched paper tape, and directly from computer systems; random access memory units; magnetic tape handling equipment; and punched tape readers.

Radio Corp. of America, Camden 2, New Jersey. Company has RCA 501 Electronic Data Processing System which is all-transistorized system that uses 8-channel paper tape and magnetic tape input, handling both alphabetic and numeric data. Basic components of system are computer, including its program control, operator's console, high-speed magnetic core memory, tape station selection and buffer unit, five high-speed magnetic tape stations, 1,000 character-per-second paper tape reader, monitor printer and paper tape punch, and high-speed, on-line printer.

William L. Raub, Inc., Silver Spring, Md. Company has punch-writer, which is compact, electronic check-writing machine that simultaneously and in one action prepares bank money orders for input to tabulating equipment and for easy visual legibility. Unit prints amount on face of check in legible type and at the same time punches amount in standard tabulating code, thus enabling both machines and humans to read checks. Unit punchprints single cards or manifold, five-part forms.

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. Remington Rand's new solid-state Univac Computer, the first magnetic amplifier, solid-state commercial data-processing system in actual operation, utilizes the latest developments in solid-state devices. Initial installation of the computer is at the Dresdner Bank in Hamburg, Germany, where it is handling the entire range of bank functions. Among its first applications are general commercial accounting, daily statements (checking account statements are issued daily in Europe), and savings accounts. It will also be used for general office functions, such as payroll, inventory control, and production scheduling application. Card reading on both card reader and read-punch unit proceeds simultaneously, as well as simultaneously with punching on the read-punch unit and processing within the central processor. This adds a significant new dimension in speed to entire data processing function. The computer's capacity for "memory" storage is 50,000 characters of information — either alphabetic or numeric. This means many problems can be solved with one run through the computer. Its on-line high-speed printer produces the completed results at a rate of 600 lines per minute. Programming is simplified through the use of a new system known as Flow-Matic coding. This uses ordinary English words and phrases instead of mathematical symbols as machine directions. Extensive programming preparation, as well as training time

for programmers, is by-passed. Since simple English can be used, operating management such as accountants, systems and methods people, controllers, etc. can prepare their own programs, leaving only the final details to a coder.

The term "solid-state" refers to the fact that a variety of newer devices such as Ferractors, transistors and magnetic cores are used. Ferractors are no bigger in diameter than pencil-tip erasers. They perform accurately at temperatures ranging from 60 degrees below Fahrenheit up to 220 degrees above.

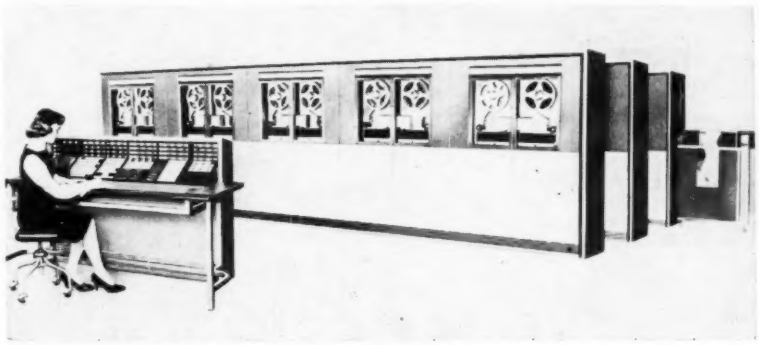
Univac II is a digital electronic computer with magnetic core storage. Accessory equipment includes Uniservo units, reading from and writing on metal magnetic tapes; high-speed printers; punched-card-to-magnetic tape and magnetic-tape-to-punched-card converters; Unitypers for typing directly on magnetic tape, and other equipment. Univac 120 and Univac 60 are smaller computers using punched card inputs, with particular adaptability to such operations as billing, production control, statistical work, scientific and engineering problems. Univac File-Computer, a medium size system, features random access and is intended for business operations of the "in-line" type.

Company also has an electronic punched tape typewriter, a development of the common language concept, which automatically creates and reads paper tape that activates other equipment and wire communications systems. When used as an ordinary electric typewriter in preparing source documents, it automatically translates everything or selected data the typist writes into a punched tape for subsequent automatic processing; when fed the punched tape prepared by it or other machines, it automatically reads and types out information at the rate of 120 words a minute. Machine is available in three different models: a tape punching unit, a tape reading unit, and a unit that combines both operations of punching and reading.

Company also manufactures an extensive line of punched card equipment, including punches, sorters, tabulators, and so on.

J. B. Rea Co., 1723 Cloverfield Blvd., Santa Monica, Calif. Company has made a line of Readix electronic computers in the small- to medium-size class, for general purpose use.

International Telephone and Telegraph Corp's automatic conveyor and pneumatic tube system mechanizes paper transportation procedures



Pictured above is RCA's 501 which is an all-transistorized electronic data processing system

Readix Dual Computer uses punched cards and magnetic tape, is a completely decimal computer, and is equipped to handle both research and development work and such business operations as payroll, sales analyses, labor distribution problems, and so on.

Royal Precision Corp., Westchester Ave., Port Chester, N. Y. See listing under Royal McBee.

Royal McBee Corp., Westchester Ave., Port Chester, N. Y. The Royal Precision LGP-30 electronic computer is a desk-sized, single-address, binary, stored program, fixed point, general purpose electronic digital computer. It features input-output via punched paper tape on integral electric typewriter or optional photo-electric tape reader and high-speed punch. Designed primarily for engineering and scientific application, the machine has also been successfully adapted to business data processing applications, such as inventory control, sales auditing, etc. It is a fully automatic computer in that its magnetic drum memory (4,096 words) allows loading of a complete program for directing machine operation on input data. Input-output is alpha-numeric and data and programs are introduced into the computer via six-channel punched paper tape. Price is $49,500; it may be rented for $1,100 a month.

Keysort Tabulating Punch is complete, punched card installation in one machine. General functions of equipment are to code data automatically and internally into Keysort cards as a by-product of normal control total listing, then automatically sense these values and accumulate, print (on tape) and summary punch for any desired classification. It is being applied to such jobs as sales and order analysis, job costs, labor distribution, and payroll computation. Tabulating Punch is automated to the degree that it automatically senses values coded into Keysort cards, and prints and totals these values. Price is $3,410; unit may be rented for $85 a month.

Scriptomatic, Inc., 300-16 N. 11th St., Philadelphia 7. Firm produces the 101-S addressing machine, which is equipped for reading either IBM or Remington Rand punched card fields. This means that the equipment can be programmed to selectively print, sort, or count, based on the same fields of holes used by the punched cards, ledger cards, and other types of card medium.

Teletype Automatic Send-Receive Set

Model 301 Scriptomatic is designed to print at ultra-high speeds from punched cards to standard mailing tapes. It prints at speed of 30,000 to 40,000 addresses per hour depending upon secondary operations to be performed. A five-line address is printed from standard punched cards to a ⅞ inch wide tape.

The Model 10 Scriptomatic is an intermediate machine between the larger fully automatic models and the hand units; used for semi-automatic addressing. Price range is from $30 for small hand unit to $60,000.

Shepard Laboratories, Inc., Broad St., at Park Ave., Summit, N. J. Firm manufactures an electronic high-speed typer operating on the rotary principle, which has type-wheels that spin continuously and in unison at 600, 900 or 1200 rpm. There is no interference between reciprocating parts, according to the manufacturer, and typing rate is 600 to 900 lines per minute. The electronic typer is part of the company's electronic high-speed output system, which includes the Servo Transport Digital Tape Reader, Electronic Decoder, and Electronic Firing Group. The Electronic High-Speed Typers are in use as the output facility for RCA Bizmac Electronic Computers for the U. S. Navy, U. S. Army, U. S. Air Force, and other large organizations. Electronic Typer with Firing Group is priced at $39,750; the Digital Tape reader is priced at $15,000. Rental provisions are offered.

The Shepard Electronic Mini-Typer produces "hard copy" at 10 lines per second, in 14 columns spaced 5 to the inch, with 64 characters.

Soroban Engineering, Inc., Box 1717, Melbourne, Fla. Company makes line of IDP components including tape readers for reading one or two perforated paper tapes. High-speed punches to perforate paper tapes with codes of 5, 6, 7, or 8 channels at rates to 300 code groups per second are also available. The firm produces verifying punches to verify data in punched paper tape; coding keyboard is used to compare re-entry of data with data in tape. Comparators to compare and detect discrepancies between two tapes intended to be identical are made by this company.

The Standard Register Co., Campbell & Albany Sts., Dayton 1, Ohio. Firm produces Stanomatic equipment which is designed to read magnetic codes on printed documents and convert information into a number of different common languages as required. Codes in 5, 6, 7, or 8 channels are pre-printed by special typewriters, registers, bookkeeping machines, imprinters, or at the factory when the forms are printed. Ink or carbon is read electronically in the machine. Outputs may be punched cards, magnetic tape, or punched paper tape, in codes with from 5 to 8 channels; may be used for utility billing, insurance company premium collections, chain store operations of inventory control, cash balances, processing retail credit sales by oil companies, and so on.

Imprinting device called Selec-tronic Imprinter makes images using a ribbon device from an electro-type chase or graphotype plate on any continuous form.

Also available is new forms separator called Form Flow Vertical Separator.

Stanford Research Institute, Menlo Park, Calif. Not a manufacturer, the Institute carries on research and development of high-speed electronic computing systems with special attention given to new components such as transistors, for use in small electronic systems.

Stewart-Warner Electronics, 1300 N. Kostner Ave., Chicago 51. Firm has produced the S-W Electronic Data Processing Unit, a small digital computer, desk-size, using standard electrical power sources. Equipment is designed for business applications such as sales analysis, inventory control, billing, order processing, etc. Product called Datafax also has been manufactured. It is facsimile equipment used for transmission of data over telephone circuits.

Stromberg-Carlson, Rochester 3, N. Y. See listing under General Dynamics.

Stromberg Time Corp., Main and Elm Sts., Thomaston, Conn. The Stromberg TRANSACTER (Transaction Transmitter) is an automatic all-purpose data-gathering system which serves as a rapid communication link between source of original entry at multiple, widely scattered transaction points and a central data-processing office. Among its typical applications are: job order recording, production control, inventory control, job costing, receipt and shipment, and on-line communication. Input media for system are prepunched cards or tags containing information obtained as a by-product of a preparatory function or from master files or decks of repetitive information.

Sylvania Electric Products, Inc., 1740 Broadway, New York 19. Firm has developed MOBIDIC computers, high-speed, completely transistorized digital computers of modular design. Computers have high-speed random-access memory unit which can operate over wide range of temperature variation.

Systematics, Inc., 10 E. 40th St., New York 6. Company manufactures Intercouplers—electronic equipment to inter-connect two or more business machines so that as one is operated in a normal manner, the other(s) are operated automatically. Equipment is compatible with IBM cards, Remington-Rand cards, punched paper tape, (all channels), edge punched cards. All models handle alpha-numeric information. Models are available for input and output application. Present models inter-connect various machines made by National Cash Register, Friden, Remington-Rand, Olivetti, IBM, Teletype, etc. Also available is a line of tape-to-card, card-to-tape and tape-to-tape converters as well as tab card readers. Prices range from $590 to $5,000, depending on combination.

Firm also has Telepunch, equipment for integrating punched card accounting with wire communications systems.

Technitrol Engineering Co., 1952 E. Allegheny Ave., Philadelphia 34. Firm has produced custom-built digital data handling equipment, and components from which electronic computer systems can be assembled. Included are the basic units of the data handling system itself and the accessory units such as power supply, cabinets, etc.

Telecomputing Corp., 12838 Saticoy St., North Hollywood, Calif. Company has manufactured the Point O' Sale Recorder for reading pre-punched mer-

chandise tags and producing punched paper tape carrying the information coded in the tags, plus additional data entered manually by keyboard as necessary. Tape is then available for automatic processing in other IDP equipment.

The Teleregister Corp., 445 Fairfield Ave., Stamford, Conn. Company has made specialized equipment, including passenger inventory control systems used by transportation companies to keep track of reservations made and remaining space. New reservations when made are automatically taken into account to keep space status up to date. Equipment is used in network systems, with information records maintained centrally.

Teletype Corp., 1400 Wrightwood Ave., Chicago 14. Firm has offered extensive line of communications equipment, such as page printers, tape perforators, transmitter distributors, typing perforators, message relay equipment, and other IDP facilities. Some page printers, transmitter distributors, and perforators operate on 6-unit code.

Model 28 equipment is one of Teletype's newest contributions to the field of data communications. Units offer a wide choice of facilities for page printing, tape punching, and tape reading. They will operate at speeds ranging from 600 to 1200 characters per minute, depending upon the application used. Functional features including sequential or multi-wire, input-output facilities, type-box printing, all-metal clutches and a built-in automatic function control device provide almost unlimited application facilities for handling data. This equipment is an integrated line, designed on the modular principle, permitting a wide choice and ready interchange of components plus accommodations for expansion.

Typatape, Inc., 60 E. 42nd St., New York 17. Company has developed method of recording data in common language form by means of mechanical attachments to standard business machines. It prints a 4-channel numerical code on paper tape ¼-inch wide, as a by-product of normal machine use. Tape is fed into a photoelectric scanning converter.

Underwood Corp., 1 Park Ave., New York 16. Firm has produced Dataflo, an integrated processing system based on "building block" concept of merged electro-mechanical equipment which produces a continuous chain of business communications as a swift by-product of any original typewritten record. The Mastertyper unit, a standard electric typewriter with 4-bank keyboard and automatic finger-letter code, prepares original business documents such as invoices, waybills, etc. Data can be entered from punched paper tape as well as manually. The Elecom is a small digital electronic computer and accounting machine with a magnetic disc storage unit.

Stromberg Time's Transacter System gathers information at point where transaction occurs and transmits it to data processing center

Pictured above is Remington Rand's new solid-state Univac Computer, which utilizes new developments in solid-state devices

Victor Adding Machine Co., 3900 North Rockwell St., Chicago 18. The Electronic Section of the Victor Adding Machine Co. has developed a new high speed transistorized analysis system called the Victor Class 100 which allows businesses to meet the problem of computing detailed cost, and sales and inventory figures. Designed to speed up accounting, forecasting, and planning procedures, it relieves office personnel of computing, classifying, tabulating, and inter-classifying tasks. System is composed of a central program unit to which is connected a Digit-Matic printer. It processes raw data in random form from punched tape. Reading at a rate of 1,000 digits per second, the program reader "selects" and adds related figures, then transmits them electronically to the solenoid-activated Digit-Matic which accumulates them. Price is approximately $12,000 with Digit-Matic Printer.

Victor Automatic Printing Calculator multiplies, divides, adds and subtracts through one control and ten numbered keys. It features automatic

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Victor Data Transmission Control System is monitor for verifying wire transmitted numerical data. It provides a means of pin-pointing and eliminating errors that occur in transmission of data over long lines. System is easily adapted to existing transmitting equipment used in chain and branch operations as well as to railroad, truck line, and air freight operations. Basic component of the system is a Digit-Matic solenoid-operated adding machine. Price range is from $425 to $1,100.

Victor Data Punch is an integrated data processing device consisting of a Victor Custom Line full-keyboard adding machine which activates a tape punch. Machine expedites accounting, forecasting, planning, sales analysis, and inventory by speeding-up the flow of vital facts and figures. Price range is from $1,325 to $2,000.

The Western Union Telegraph Co., 60 Hudson St., New York 13. Company has produced IDP facilities which include nationwide network of transmission lines, and wide range of communications devices, such as sending and receiving page teleprinters, tape perforators for punching paper tape, switching center equipment, automatic numbering machines, sorting equipment, and facsimile equipment. Type 19 sets have also been made by this firm to record information in punched tape and transmit it.

Accessories and Services

American Lithofold Corp., 53 W. Jackson Blvd., Chicago 4. Electronic Check has prepunched tab card checks, on continuous marginal punched forms, with a side-stub perforation, mounted on Part 2 of the form, for use with tabulators, Teletypers, and other equipment. Pocket Form for IDP tapes carries tapes in built-in pocket on back of form. Hand filing or fastening with clips or staples is unnecessary. Electronic Remitter incorporates the addressed envelope with account number, name, address, and amount of statement as an integral part of invoice or statement form. The return envelope stays with the statement until remitting customer makes payment.

Airmatic Systems Corp., 441 Market St., Saddle Brook, N. J. Automatic conveyor and pneumatic tube system for paper handling procedures.

Beemak Plastics, 7424 Santa Monica Blvd., Los Angeles 46, Calif. Firm makes tabulating card holders which may be installed on shelves, or in bins, boxes and other containers.

Cycle Equipment Co., 17480 Shelburne Way, Los Gatos, Calif. Company has manufactured line of Universal Tape Minders and Standard Model Tape Minders for handling punched paper tape. The units are slave machines which start and stop automatically as tape is fed or as feeding ceases; designed for communications systems.

Dresser Products, Inc., P. O. Box 2035, Providence 5, R. I. Firm has punched tape accessories in the Tape-File line including envelopes, folders, winders, unwinders, files, searchers, reels, and boxes.

Forms, Inc., Willow Grove, Pa. Firm manufactures line-hole continuous business forms.

Mac Panel Company, High Point, North Carolina. Firm makes control panels and wires.

Monarch Metal Products, Inc., MacArthur Ave., New Windsor, New York. Firm manufactures data processing auxiliary equipment. It offers an extremely large variety of accessories and filing equipment for use with punched cards including FILAWAY cabinets and a complete line of items for the storage, handling and moving of magnetic tape.

Moore Business Forms, Inc., 900 Buffalo Ave., Niagara Falls, N. Y. Firm makes Model 425 imprinter detacher for continuous forms or continuous tabulating cards. It will imprint, slit-off margins, detach forms to be imprinted, remove margins, detach and stack forms in numerical sequence; also offered is an extensive line of forms for use in automated data processing systems with research facilities for the development of the forms re-

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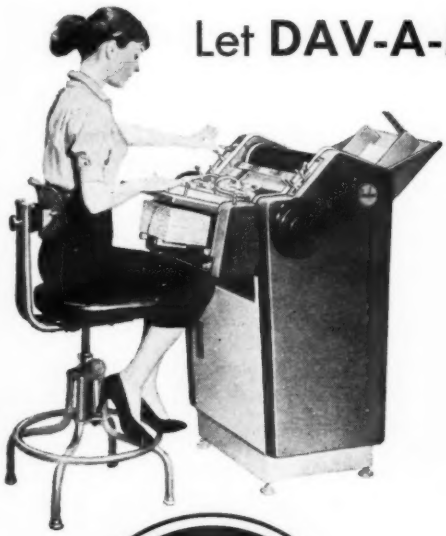

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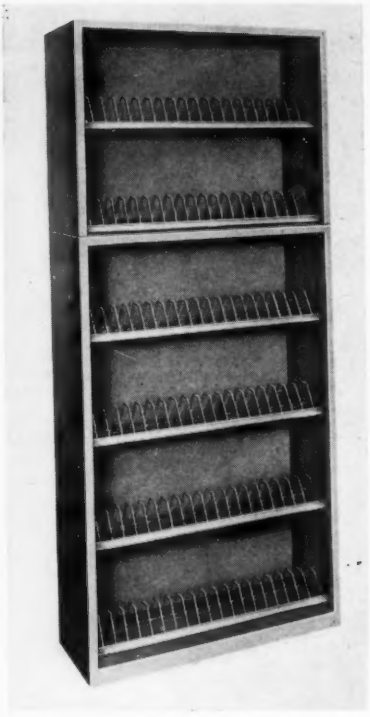


Above shows Tab snelfless file rack

quired in such systems. Also available are the Formaliner and Vertical Spacer, devices for handling forms. Decollators and stands, imprinter-detachers, deleaving attachments, and other equipment are also available.

Also, Speeditacher, new portable detacher which is portable for on-the-spot use.

The Shaw-Walker Co., Muskegon, Mich. Firm has produced complete line of holders for filing punched paper tapes and edge-punched cards for all systems applications. Also, File-Desk, which is a work station for Flexowriters.

Standard Instrument Corp., 657 Broadway, New York 12. Firm has Time Recorder Totalizer which continuously measures and records machine utilization.

The Standard Register Co., Campbell & Albany St., Dayton 1, Ohio. Company's IDP Workshop is used for the design and testing of forms for use in IDP systems. The facilities are available for research. It also offers forms for IDP, together with accessory equipment for the handling of forms.

Systems Sales Co., 13 Broad St., Binghamton, N. Y. Company has produced line of storage equipment, sorting stands and carts for use in handling and storing tabulating cards, and for storing single, double, and triple control panels. Also available are accessories for use with electronic computers.

Tab Products Co., 995 Market St., San Francisco 3. Company produces long line of automation accessory equipment. Equipment may be generally classified as follows: Tabulating card filing and storage; tabulating card handling; tabulating card reference; control panel storage; magnetic tape filing and storage; and "spacefinder" files.

Recently developed TAB equipment can, with relatively minor changes, be used in conjunction with punched card tabulating installations, card activated computers, magnetic or paper tape computer systems, and analog computers.

Uarco, Inc., 7902 S. Ashland Ave., Chicago 20. Firm produces bursting machines which separate continuous tabulating cards. New Uarco Burster is equipped with high efficiency trimmer, and is capable of trimming up to 12 plies of fastened control punched forms.

Universal Business Machines, Inc., Columbia, S. C., P. O. Box 5183. Firm has Keytronic line of sorting machines.

Visirecord, Inc., Copiague, L. I., N. Y. Firm offers a variety of equipment for storage of IDP common language media including filing cards of the "vertical-visible" type, with pockets for punched tape, or with cards themselves capable of being punched along an edge with IDP codes. Also offered are plastic tape panels, plastic channel cards, and Visisleeves, which provide visible indexing for use in random sequence filing and finding of tape packs of variable lengths.

Wheeldex & Simpla Products, Inc., 40 Bank St., White Plains, N. Y. Firm manufactures mechanized rotary card files and offers equipment for housing IDP tapes for ready accessibility, either alone or in combination with related records. Simplawheel and Simplafind mechanized files may be used as the basic housing units. Simplawheel equipment is priced from $600 to $1,800; Simplafind equipment is priced from $3,000 to over $4,000. Wheeldex Portable Line consists of many smaller models carrying from 1,000 to 4,000 cards. Other Wheeldex models, either motorized or manual, contain from one to five wheels, and hold from 4,000 to 30,000 cards per cabinet.

Whiteford Laboratory, 420 Market St., San Francisco 11. Company has produced electric winder for common language tape with variable speeds and tension, and other features, designed to operate automatically according to variations of output.

Next month's "Tools of the Office" series will feature adding, calculating, bookkeeping, and accounting equipment.

Horizons—

(*From page* 25)

are at challenging spots? Will they be able to function in jobs calling for more initiative and more ingenuity? Again, what will happen to the workers in supervisory levels now if the present large groups of basic clerical workers found in most large offices are dispersed?

Moreover, if the prospect of a three-level hierarchy—machine-tenders (who would as the machines themselves become more durable and accurate, tend to disappear); programmers and analysts; and decision makers — should be valid, what lines will be developed to make possible advancement from one group into the others? If such a stratification should occur, and if it should be reinforced by physical separation of the groups (as has already occurred in some companies) many of the informal advancement lines now open in companies would be closed. Only much more elaborate selection and training programs than any we have seen to date would insure that the office would not arbitrarily be cutting off talented and valuable people from a chance to move up to top level responsibilities.

What of our educational system? Do we maintain it in its present form, or should it be adapted to the new influences that promise such sweeping changes in our industrial and commercial life?

These are all pertinent questions,

(*To page* 70)

office management

Semi-annual Index

January-June, 1959

Automation in the Office

Effects of recession still felt in current trends in automation
by Robert M. Smith.....January, page 14
How to control the hidden costs of an electronic data processing installation
by Ralph E. Weindling January, page 17
Carborundum Co. develops "Total Systems Approach" in data processing installation .....January, page 20
How to design forms for the machines used in integrated data processing
by Ray Marien.....February, page 21
Machines can aid the decision-making process within these strict limits
by Raymond Dreyfack.....March, page 30
How Pabst IDP system speeded orders—and helped to rout the skeptics
by Murray F. Hepple.....May, page 40
New programming approaches continue to simplify computer applications
by Robert M. Smith.....June, page 27
"Total systems" approach to integrated data processing pays off for Seagram
by Joseph C. Blunt.....June, page 39
Automation in the office section.....February, page 34
March, page 34
April, page 38
May, page 43
June, page 43

Layout and Equipment

Office building and office layout planning (Two parts)
by Kenneth H. Ripnen.....January, page 50
February, page 29
Wood furniture maintains its popularity as prestige symbol for executives.....January, page 54
Range of color and design available in steel furniture continues to grow.....January, page 56
"Office of the Year" Awards are announced .....March, page 29
"Office of the Year" Awards, 1958.....May, page 21
Joseph E. Seagram & Sons, Inc.....May, page 22
Guarantee Mutual Life Co.....May, page 26
Eastman Kodak Co.....May, page 30
International Minerals & Chemical Co..May, page 32
Kelly-Smith Co. .....May, page 34
Wachovia Bank and Trust Co.....May, page 36
Office built over coal mine combines economy, efficiency, attractiveness.....June, page 32

News of Associations

AMA conference will stress role of computers in "dynamic management".....March, page 32
NOMA will hold 40th annual conference and business show in New Orleans next month .....April, page 31
Computers are key to programming entire business, LaPierre tells AMA.....April, page 32
Automatic programming increases computer's usefulness, AMA told.....May, page 40

Personnel

Six major challenges for personnel administration foreseen in the '60s
by Edith Conner.....January, page 24
Is personnel administration falling behind in a rapidly changing world?
by Cecil E. Goode.....January, page 27
Manpower Council: Women past 35 to form strength of future clerical force...January, page 30
Changing ratio of clerical, production workers spurs unions' interest in office..January, page 34
How much personality is there in your personnel program?
by Wilbert E. Scheer.....February, page 27
Is your company exploiting all the possibilities of service bureaus?
by Gerald Murphy.....June, page 30

Systems Design and Methods

Profit cost control—a formula to give every management level new incentives
by Ralph Fairbanks and
Jerome Hoffman .....January, page 38
Let's stress information — not pieces of paper
by Robert Shiff and Alan Negus.....January, page 41
The fundamentals of a sound employee information program
by Robert G. Black.....January, page 45
Mammoth center keeps track of a half million reservists .....February, page 24
Continuing management support is the key to healthy, effective planning function
by R. L. McCaffrey.....February, page 60
New centralized inventory control speeds Massey-Ferguson customer service .
by Robert M. Smith .....March, page 23
How checklists can help you select the best equipment for your office
by John LeRoux.....March, page 26
American systems approach brings peaceful revolution to Brazilian bank
by Martin Smith.....March, page 33
Tape punching accounting machines simplify drug company's accounts payable operation .....March, page 35
How one small agency cut costs, speeded paperwork without mechanization
by Robert Shiff and Ralph E. Steere....April, page 25
It pays to know printing techniques if a good forms control job is to be done
by Ray Marien .....April, page 28
Why not "talk away" your heaviest paperwork burdens?
by Benedict Kruse.....June, page 34
How to develop an effective records retention schedule
by F. L. Sward .....June page 37

Tools of the Office

Tools of the office series
by Irene Lipschitz.....January, page 71
Check devices, numbering machines and time recorders
by Irene Lipschitz.....February, page 40
Copying and duplicating equipment
by Mary D. Lyons.....March page 38
Air conditioning equipment, fans and air circulators .....April, page 44
Acoustical materials; floor coverings; overhead lighting equipment, movable partitions .....May page 47
Mailroom equipment .....June, page 48

Automation—

(*From page* 38)

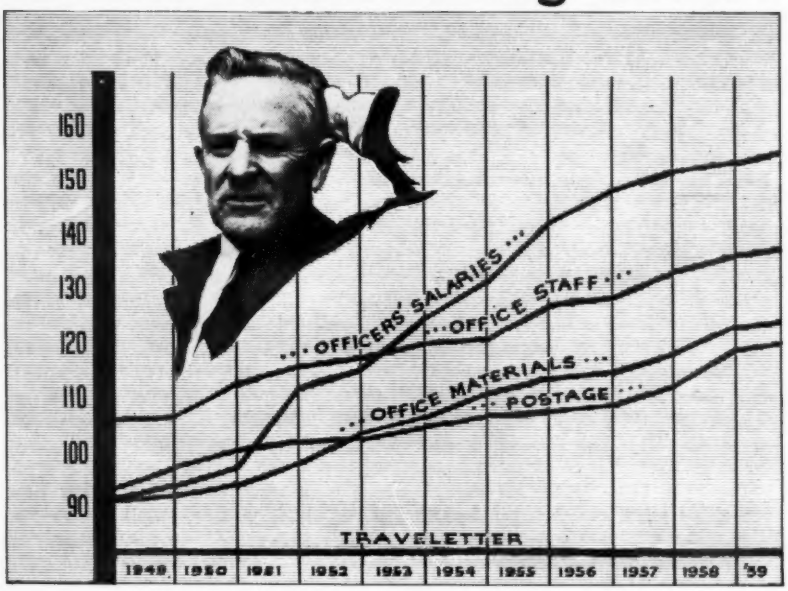
magnetic cores, used within the internal circuitry of the computer. Such "solid state" components have replaced a majority of the more conventional vacuum tubes. They require less power for operation, generate less heat, and because of their small size, have been important in the development and consequent use of the printed circuit card. (see picture page 38). The most significant development in "solid state" components for the Univac has been the Ferractor, company spokesmen said. The Ferractor is a tiny pulse-amplifying device no larger than an ordinary pencil-tip eraser, used in the computer's internal magnetic core circuitry.

The Eniac (Electrical Numerical Integrator & Computer), a pioneering Remington Rand computer system of 1946 vintage, weighed over 30 tons, occupied 1500 square feet of floor space, and required the steady performance of 18,000 vacuum tubes, all with hand-soldered connections. In comparison, the Univac SS 90 weighs 3500 pounds, occupies 275 square feet of floor space, and utilizes printed card circuitry with solid state components. The company stated that the Univac SS 90 will perform the functions of its larger predecessors with the added advantages of lower cost, reduced maintenance, and lower power requirements. It has also been emphasized that the new system is not a prototype. It has been "field tested" and is now in steady production, officials said.

A major feature of the Univac SS 90 computer is the magnetic drum memory storage unit, capable of retaining 50,000 characters of information, or 5,000 ten-digit words. The computer memory storage will now allow such problems as payroll, inventory control, sales analysis, etc., to be completed in one pass through the computer, company officials pointed out. The storage unit eliminates having to process one part of a problem in order to use it as input for another part of the problem. Now, the total problem may be processed through one cycle of the system, they added.

All four units of the Univac Solid State 90 EDP machinery will rent for $6,950 a month, and may be purchased for $347,000, the company announced.

Worried About Rising Costs?



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Layout—

(*From page* 32)

The grid layout imposes no such limitations. Some offices have placed their basic module in a grid pattern as low as four feet, and with a corrugated deck floor electrical or 'phone connections may be made at almost any point. Such absolute flexibility is not only expensive; it offers, to our mind, positive disadvantages, since complete mobility is simply an invitation to all concerned to place their desks wherever they please. If the office worker can place office equipment anywhere he wishes on a four-foot square, you can be sure everyone will want to do it a different way. If, on the other hand, your underfloor ducts do not form a grid, but rather are placed as parallel continuous rows, with a five- or eight- or ten-foot interval between each duct, a degree of influence and control through mechanical means is automatically placed on the layout arrangement of the office. A desk may be immediately above, or on one side or the other of the duct which carries power, 'phone and intercom lines. It may be placed parallel to the duct, or at right angles to it. But that is all. It cannot be placed anywhere on a square module, or anywhere on the floor area, as it can when a grid or corrugated deck system is used.

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are less expensive that either the grid system or the corrugated deck arrangement in terms of overall costs for complete floor construction.

All these factors must be considered when an office layout plan is created because the decisions taken then as to how to condition the proposed space structurally, physically and mechanically, will, as we have shown, have a definite influence on the workability and efficiency of the office layout plan. The decisions made at this point will serve to control the amount of space required, as well as the way the space is used.

And, whether existing space is to be used, or new space is to be built, all of these factors are within the control of the space planner. Space in a building twenty or thirty years old can be mechanically conditioned in terms of underfloor ducts, light and air conditioning patterns, to match the best and most modern standards.

Let's look a little further into this concept of influencing office layout planning by structurally, physically and mechanically conditioning space in the planning stage.

If the location of office traffic corridors is coordinated at this stage with the locations of the main supply and return air conditioning ducts, which must run through the office, then hung ceilings can be planned beneath the air ducts, since corridors do not require as much ceiling height as general office space. Such hung ceilings over corridors, running parallel with the preplanned location of perimeter rows of private offices, begin to give the office a point of control of layout, a physical break between types of office space.

Together with window modules and column centers, they establish a pattern for planning the exact locations of partitions and desks. Thus, we see the beginning of control of space through structural and physical elements—the window module and column span, and hung ceiling breaks.

If the location of the supply and return grills for air conditioning, the underfloor ducts, and the lighting fixtures in the ceilings are coordinated with window modules, column spacing, and the area breaks established by hung ceilings, over corridors, then the location, type and size of the partitions defining perimeter private offices are almost established for the planner in terms of the number of private offices required and the basic private office space allotment that has already been decided on. There will be a logical pattern of partitions and doors to give private offices of the right size. Almost any other pattern of office layout will be obviously illogical.

Reproduction—

(*From page* 38)

for use in the Univac 60 Computer. In this manner the current picture of sales and anticipated gross profit by product is known almost immediately.

Chemical sales are handled differently, in that orders are transmitted directly to the plant concerned from the district sales offices. A selected punched tape is prepared for transmittal to New York and for feeding into the Univac 60. Thus, the complete picture of sales, and anticipated gross profit is available at all times to executives of the company.

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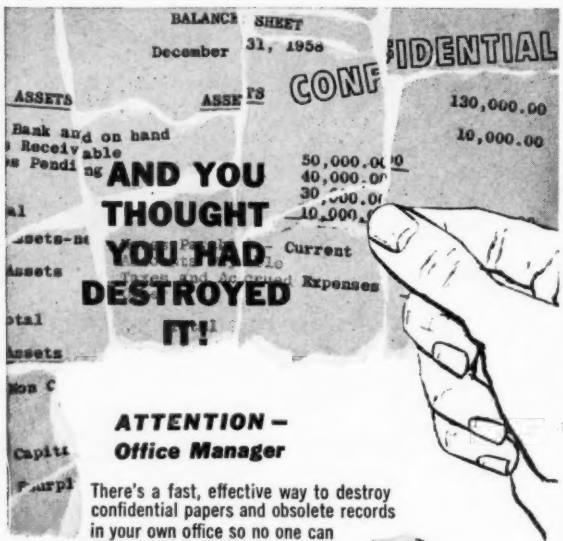

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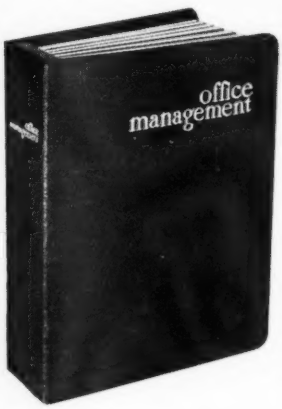

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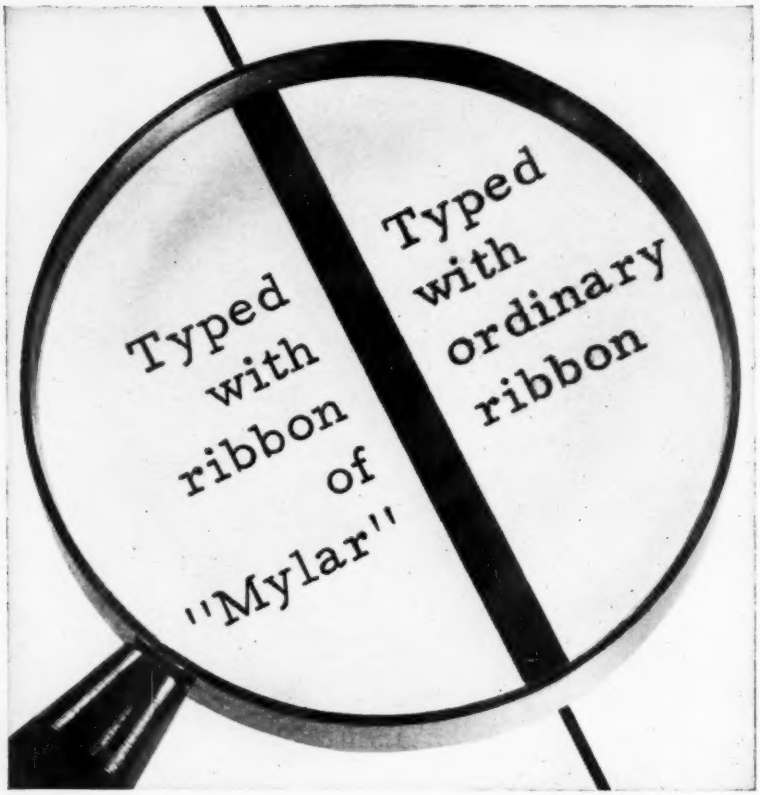

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Horizons—

(*From page* 64)

and they are questions to which answers must be found. For the one thing that seems certain today, as computer sales soar upward, as each day brings new and startling technical improvements, is that automation, for both office and factory, is no longer a possibility for the remote future; it is a healthy infant, alive and kicking, and growing at a phenomenal rate. Nor can we slow its growth arbitrarily while we consider the problems that might be caused by it. The pressure of competition will prevent most companies from doing that in the domestic business picture; the pressure of competition from overseas manufacturers who are adapting every principle of automation as fast as they can will prevent the nation from doing it as a whole.

The die is cast. We are in the age of automation now. We know it will bring problems as well as tremendous advantages. The relative weight of the problems as compared with the advantages will be determined by how well we anticipate them, and plan now for their solution.

NOMA—

(*From page* 36)

action, the tax aspects may often be the determining factor.

"The second major set of external influences responsible for changing the business world as we know it," he said, "are the new techniques of production and the new products coming out of the factories. It has been said that over half of the products being marketed commercially today have been developed since the end of World War II. The post-war development of

television and the hundreds of thousands of new jobs it has created—all in the space of a few years—is a good illustration. With the aid of automation, the speed of industrial developments has itself reached startling proportions. To help our industrial management cope with the speed at which the industrial complex is now whirling requires our administrative executives to devise new and faster ways of producing vital information on which key decisions must be based."

Changing patterns of business education constitute the third major external influence on the office in transition, he declared.

Specialized training more common

"A generation ago the majority of our business leaders were men who had reached the top through a generalized education and plenty of experience," he stated. "The great increase in the number of graduates in the business sciences during recent years—and the steadily growing enrollment in schools of business administration—point to the fact that business leaders of tomorrow will be—and indeed are today—men who have grown up with modern technology and who are accustomed to making decisions on the basis of well analyzed information rather than intuition. The administration executive will usually himself be a product of these same new educational influences and this in itself will cause new administrative patterns to be developed. For example, it will not be many years hence when an administrative executive takes the computer just as much for granted as he now does a bookkeeping machine."

Perhaps the most significant results of the external forces affecting the office will be a reversal of the trend toward decentralization of administrative responsibilities and work load; a situation where corporate size will no longer be an indication of success, and may even be a handicap; and a reappraisal of individual compensation and prestige patterns, he said.

"Specifically," Macdonell declared, "there must come a realization that the significance of a man's contribution to his company must not be measured only in terms of the work force over which he has jurisdiction. We must come to realize that a research scientist, unfettered with any supervisory responsibilities, can be paid as well and occupy as large an office as the

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manager of a work force of a thousand people."

Keynote speaker for the conference, the first NOMA has held in the South for a number of years, was Arthur K. Watson, president and director of the International Business Machines World Trade Corp. Warning that present office expansion trends if unchecked would make a clerical work force of 21,000,000 necessary by 1975, he stated that this vast personnel load could only be avoided by offices mechanizing far more heavily than they are doing at this time.

But the necessary mechanization of office tasks can only be accomplished if there is much closer coordination between those responsible for running the office and equipment manufacturers, he pointed out.

"If every dull, grinding repetitive office job is brought to the attention of equipment manufacturers, devices will be created to meet the job requirements," he stated.

Manufacturers have not yet done enough to meet the particular needs of small and medium sized businesses, he declared, and will have to concentrate on the problems of such concerns in the future.

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Politics—

(*From page* 37)

James C. Worthy, vice president, public relations, Sears Roebuck and Co., Chicago, contradicted Maremont's thesis by arguing that politics and government have need for business skills and experience, and that businessmen have no one but themselves to blame if they feel government is unsympathetic to their problems, since they tend to hold aloof from political activities.

"Above all," he continued, "the failure of businessmen as a group to play an active political role places business in a vulnerable position. Failure to participate actively in the political life of the country tends to make businessmen as a group unduly naive about political processes. This lack of understanding and consequent lack of skill places business at a grave disadvantage. More than that, it represents a serious flaw in the workings of our democratic social order, for a democracy requires a high degree of political skill in all groups which comprise the society."

"Bipartisan" approach urged

However, he cautioned, businessmen entering the field of political activity must, if they are not to create a sharp wave of reaction, keep a sharp line of demarcation between their political activities and their company interests.

"Religious activities provide a useful precedent," he continued. "No one questions the right of the businessman to be active in the church of his choice as long as he does not mix his business and sectarian interests. So too with politics. The public will readily accept political involvement on the part of individual businessmen so long as they keep their business out of it and keep their politics out of their business. Just as the head of a business must not try to influence the religious activities of those in his organization, he must not try to influence their political activities. But there is no reason he should not encourage his subordinates to take an active part in politics, so long as he does not try to influence their choice of party. This might be called a bipartisan as distinct from a nonpartisan approach. The difference lies in recognizing the need for supporting both parties rather than following the route of independence or trying to disguise support for one party by protesting special interest in neither."

If these standards are followed, he continued, greater participation by businessmen in each party would benefit business and the political structure. Otherwise, he pointed out, there is a real danger that each major party will become the captive of a single economic group.

"While the Democratic party is becoming increasingly dependent on labor, the Republican Party is becoming increasingly dependent on business," he declared. "Finding labor support foreclosed to them, some Republican polical leaders choose what appears to be the logical alternative. Seeing what is happening to the Democratic Party, businessmen turn more and more to the Republican Party in the hope of providing a counterweight to labor's growing political strength. As a result, the two parties are coming more and more to differ in basic philosophy and program."

Violent reversals possible

This is dangerous, and in the end could be self-defeating for business, he maintained, since a wider split in basic political philosophies between the two major parties will mean a violent shift of government programs and economic policies each time power moves from one party to the other.

"It would be a great mistake if the Republican Party should ever become the party of business, and the Democratic Party the party of labor," he asserted. "There is still time to reverse the trend and restore the party system to its traditional non-ideological basis. If this is to be done, those businessmen who are of Democratic persuasion—and there are many such—must begin to play an increasingly active role in the affairs of the Democratic Party, and those who are of Republican persuasion must do likewise within the Republican Party. Just as it is earnestly to be hoped that business will gain a more effective voice in Democratic councils, so it is to be hoped that labor will gain a more effective voice in Republican councils. As each party grows more truly national and more broadly representative of the interest groups it embraces, so will our political institutions be strengthened in their capacity to serve the interests of all the people."

Both Paul Butler, chairman of the Democratic National Committee, and Senator Thruston B. Morton, chairman of the Republican National Committee, urged greater participation by businessmen in politics, but Butler warned that businessmen who enter the "political arena with only the narrow purposes of securing higher tariffs for their industry, special tax concessions for their corporations or special competitive advantage for their products would be better advised to stay out.

"With such narrow purposes in mind, they are going to end up alienating the general public, creating suspicion of the business community, and doing a clumsy job of obtaining even their narrow objectives," he warned.

Nor should businessmen assume, as they too often do, he continued, that expert knowledge in one field guarantees fluency in another; that they can make any substantial contribution to government or politics without learning new practices and principles.

Businessmen should interest themselves in politics, but as citizens first, businessmen second, Butler continued, urging that industrial leaders encourage all employees to take an active interest in public affairs and to participate personally and actively in the political party of their own choice.

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their employment," he warned. "In other words, they should not be penalized if they do not hold the same political views as the boss.

"This means giving up the practice, still quite prevalent, of virtually ostracizing employees who show certain political leanings contrary to top management, or of bringing pressure to bear on young trainees to make them conform to certain political views," he stated.

Senator Morton, the Republican spokesman, attributed the increasing interest of businessmen in politics to the smashing Republican defeat in the 1958 Congressional elections, and said that organized labor groups, which generally supported Democratic candidates in 1958, will probably increase their political activities in the 1960 elections.

Generally, conference speakers, while holding to the view that businessmen as individuals could make great contributions to political parties by more direct participation in political activities, reflected a growing concern over the effect of direct political action by corporations as a matter of company policy—a trend that has been growing since the 1958 election campaigns. During the same week that AMA speakers were warning against direct corporate intrusion in the political picture, The American Can Co. announced that it was going to take public stands on political issues in the company name. It thus joined a group of companies that believe in direct political activities by the company itself. The group, though still small, is growing. Among them: Ford Motors, General Electric; Armco Steel Corp. The degree to which the company engages in political activities as an entity varies: some merely present an agreed-on position on political issues to employees, managers and dealers; others plan to engage in direct political activity, on the outside, taking public stands, and attempting to persuade legislators, as well as the public, of the correctness of the company's views.

People—

(*From page* 30)

when a key employee handed in his resignation? What was your first reaction? Did your heart sink? Did you get all worried and flustered trying to think up devices to get him to stay? If such was the case, in all probability you did not have adequate coverage for his job.

The worst reason someone can offer for doing a job in a certain way is, "That's the way it was always done." In spite of all the progress business has made in the past decade or two we still run into the occasional individual who staunchly refuses to acknowledge that any change is taking place about him.

Sometimes such resistance to change is the result of fear and insecurity, the worry that the individual will not be able to cope with the new situation. Here the solution is kindness, patience and understanding. Try to unearth the roots of the insecurity, then go to work to bolster the worker's confidence. Let the die-hard feel he is participating in the new system, that he has an inside track on the change, and he may cease to be a die-hard.

Unfortunately, sterner measures are sometimes needed. Our die-hard's noncooperative attitude may be the result of sheer laziness. He might feel he has a good thing in his present set-up and resent having his domain threatened. Whatever the reason, giving in to antiprogressive inclinations can be dangerous. This type of die-hard usually has

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a loose tongue. Chances are he has already boasted that, "Nobody's going to change my way of doing things. Just wait and see."

If it does turn into a contest of this kind, and if Mr. Diehard gets his way, it will mean loss of respect for management, and lack of harmony in the department. On the other hand, if a firm stand is taken in a reasonable way, showing how the new way is better than the old way, our stubborn friend will have no choice but to go along with the change. In time, he may even be won over to the new regime as an ally.

We are embarking on a new era of technological advance. Automation consultant Eugene F. Murphy states, "Management sometimes becomes preoccupied with all the intricacies and accomplishments of new machines, with the result that human relations are neglected right at the time when people need most reassurance." Enlightened administrators are finding more and more that such reassurance is a two-way street offering in one lane harmony for the individual, in the other harmony for the operation of the department. For the perfect system without the proper personnel is like a beautifully formed horse with a novice for a rider.

Communications—

(*From page* 35)

cessful communications manager, knows that he cannot start by shaking the firmly held idea of his audience. He must know the points on which both he and his audience agree, and stress these first, before trying to change their opinions on other, perhaps even less vital, points.

"Therefore, the successful communications program is closely identified with the office employee's own interests. The company must make certain that the approach adopted, the ideas presented and the semantics used, fall within the context of the employee's own job and personal experience," Dr. Baehr concludes. "Particularly on the office level, the communications program must respect the intelligence of employees and avoid talking down."

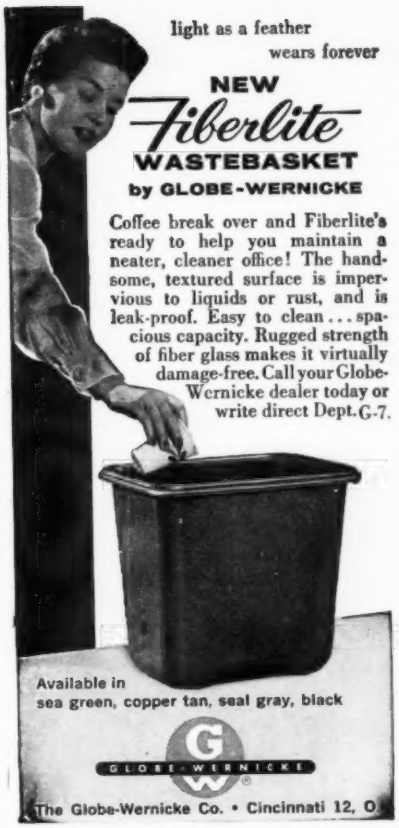
Thus the content of the communications program must be directly related to the needs of the individual office and the individual office employee. What will "work" in one office will not necessarily do the trick in another. This means that every communications program must be tailor-made, designed after intensive study of business objectives, specific goals, obstacles, problems, policies and procedures.

Three-phase program suggested

There are, however, certain potential, developing, or critical problems in every office, differing from business to business only in degree. These problems have been broken down by the NAM Advisory Group into three phases, which in total give a complete picture of the comprehensive content of a model effective communications program.

Phase I — Building Mutual Respect and Confidence. To be fully effective concerning the more difficult problems, the communications program in the office must work far back upstream to modify attitudes, preferably before they reach the problem stage. Far in advance of the time when any particular problem reaches the critical point, management must attempt to build mutual respect and confidence through considered action, assuring the proper interpretation of its motives.

In this phase, the communications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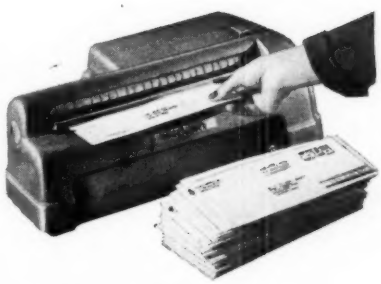

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program is particularly concerned with the quality and effectiveness of day-to-day contacts, and the transfer of information. This phase would include effective orientation and indoctrination of new employees. In some cases this may involve an elaborate training period extending over several weeks; in other offices it may simply consist of—as the office manager in a small town put it—"Orientation? Oh, you mean introducin' around and gettin' acquainted."

Also in this phase we find the continuing two-way communication on policies and procedures which affect the employee (pay, benefits, working practices, hours, etc.) and information concerning the general state of the business—including management's successes and failures, and the many things the employee can do to contribute to the success of the enterprise.

Phase II—Understanding Differing Attitudes on Economic, Social, and Political Issues. Attitudes are conditioned by ideological beliefs. In certain situations office employees may feel that while management is generally right, it is wrong in taking a particular action. Therefore, this phase of the communications program tries to develop a mutual understanding of the ideological issues which underlie potential business problems. Each office will have different issues of concern, but the types of issues may include a discussion of : 1) the need for constant technological progress; 2) the pros and cons of automation, stressing the benefits that will arise from modernized methods; 3) the need to work overtime on occasion, in order to achieve job stability in the face of fluctuating demand, etc.

Phase III—Gaining Deserved Support for Specific Management Actions. In this phase, the communications program is called on to secure the employees' full understanding of a change and the reasons for it. They must be told how they will be affected, and how they will be benefited; and convinced that their own best interests have been considered. At this point management must be willing and anxious to answer their questions, listen to their comments, and give the fullest possible reassurance.

Naturally, particular management action will vary with each office and at each particular time. Some of the problems that might be treated in this phase are: the rearrangement of work areas, or changes in working conditions; the installation of new equipment; changes in organization, promotions, transfers, changes in responsibility and authority; special programs in cost-cutting or increased efficiency, etc.

For the best interests of all concerned, it is important that information concerning changes of the type outlined above be passed on to the employee before, during, and after the change has occurred, whenever possible. And *always* before the grapevine gets the news.

When there is a lack of factual information, misinformation flourishes. The questions and suggestions of informed employees will reveal their interest in what is going on and their response to management's efforts to

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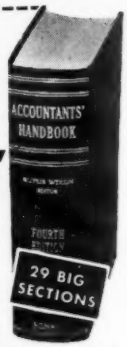

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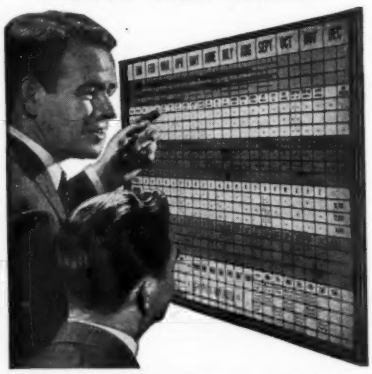

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keep them in the know about what has been accomplished and what is ahead.

Passing on information of the type outlined above does not demand a costly or elaborate set-up. The only requirement for a good communications program, according to experts in the field, is a coordinated effort, initiated by top management, to secure a greater degree of employee allegiance and sympathetic understanding. It is difficult to pull the wool over an office employee's eyes. He is in a better position to sense insincerity than anyone else in the business. Good communications thrive on mutual confidence and trust.

Says Mr. Andrews, "Successful communications means that there is a continuous exchange of fact and ideas as management and employees become accustomed to talking and listening to one another. A sudden deluge of information designed to correct a sudden critical situation is likely to confuse the employee and make him skeptical.

"That is why each program must be designed to fit office size, personality, requirements, and limitations. Regular messages from management are far more effective than any mass produced series of printed information. Although," he adds, "these too can be used, and can be successful, if used wisely."

What, then, are the most effective means of communicating the information outlined above?

The media selected will, of course, vary with the type of information to be communicated and the size of the employee audience. But of all the communications channels open to management, none is as effective as face-to-face communications. On the office level, the staff meeting continues to be the favorite way to provide employees with fast, accurate, full explanations of company progress and policy.

These meetings may be large "round table conferences" conducted by supervisors with their employee groups, or private performance appraisal discussions. In this category also, fall annual business report meetings, and orientation sessions.

"The staff meeting is the perfect medium for presenting information such as the financial situation of the business, the company story, how the office fits into the business system as a whole, and explaining changes in office operation," says Harris. "No amount of mass communication can effectively substitute for an open discussion between supervisor (and/or top management) and the employees."

Also in the category of effective communication on the personal level are the many daily contacts between supervisors and employees, for it is in these day-to-day contacts that the personal relations will be established.

"The employee should be invited to ask questions and make suggestions," says Dr. Baehr. "And whenever possible he should be given a full explanation of what is wanted and why."

The attitude survey forms another important channel of upward communication, particularly since it assures anonymity and may therefore encourage the employee to express his true feeling.

But oral channels alone, while most

(*To page* 79)

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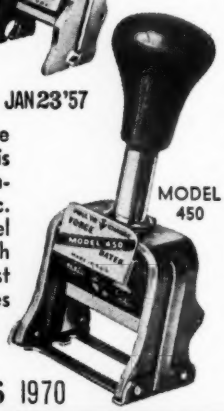

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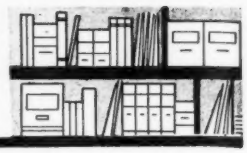


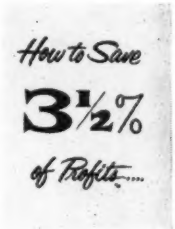
Direct Mail (1)

Pitney-Bowes, Inc., Stamford, Conn. A 32-page, illustrated booklet, *How to Use Direct Mail to Promote Your Business,* was written primarily for the small business, but offers hints to all direct mail users. One chapter of the booklet is entitled, "How to put direct mail to work for you."

Computer Case History (2)

Royal McBee Corp., Port Chester, N. Y. (S-509) A pamphlet by Paul Seligmann, Senior Research Physicist at the Research and Development Laboratories of the Portland Cement Association, discusses the specific problems which led to his organization's purchase of a small digital computer. Also discussed are the uses to which the laboratory has put the machine, and the benefits derived.

Fraud (3)



Cummins-Chicago Corp., 4740 N. Ravenswood Ave., Chicago 40. A booklet entitled, *How to Save 3½% of Profits . . . and Maybe More,* emphasizes the conditions that make fraud possible without collusion. Specifically treated are the areas of disbursement and inventory where the greatest losses occur.

Form Printer (4)

Electronics Div., Clary Corp., 408 Junipero St., San Gabriel, Calif. A 10-page brochure (S-112), describes the technical details of new Model 1941 form printer. The form printer is an extension of the Clary parallel-entry data printer.

Microfilm Printer (5)

Stromberg-Carlson-San Diego, 1895 Hancock St., San Diego 12, Calif. A comprehensive booklet describes the operation, applications, and construction of the S-C 4020 High-Speed Microfilm Printer. The S-C 4020 is said to be capable of recording computer data on microfilm at the rate of 15,000 characters per second.

Photographic Reproduction Laws (6)

Peerless Photo Products, Inc., Shoreham, Long Island, New York. A chart is available which lists those documents it is illegal to photocopy under Federal law. This informative guide, "What Not to Copy . . ." lists bonds, coupons, licenses, and copyrighted material (without permission of copyright owner) among the many items forbidden for photographic reproduction under penalty of law.

Office Furniture (7)

General Fireproofing Co., Dept. B-26, Youngstown 1, Ohio. *Plan to Profit From Your Office Investment* is a booklet emphasizing the importance of office furniture in office planning and layout, as well as its effect on human factors involved in creating greater office efficiency.

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Communications

(From page 77)

effective for the two-way transmission of information and feeling, cannot completely satisfy the communications needs of the organization. Although it is the most effective means of communication, the spoken word is also the most subject to distortion, and must often be supplemented by written communication. Oral communication alone puts a heavy burden on the supervisor who cannot, except in the smallest offices, serve the needs of the entire office force. The media available to supplement oral communication that are particularly effective in an office situation include: bulletins, within the hour if necessary, to inform employees on some matter of immediate importance, before they receive it from another source; weekly newspapers or an employee magazine; letters to the home, for truly personal matters affecting the employee's family as well as himself; and those program aids (booklets, bulletin boards, exhibits, etc.) that will from time to time be necessary as a part of a coordinated program giving the office employee a full appreciation of the total business picture.

"But," says Harris, "an honest, sincere, friendly approach on the part of management will further a pro-management attitude far more successfully than any amount of slick advertising! Management must *communicate* its point of view by establishing a personal rapport with its office personnel; it cannot 'advertise' its office into good relations."

Offices are still organizing. While union gains among office personnel have not been as great during the last two years as was originally anticipated, a second "push" is not far off. The reasons for the delay are many, among them being the job security fostered by the recession, and the relaxed efforts of the unions themselves during 1958 when many organizers were pulled from their jobs during the elections.

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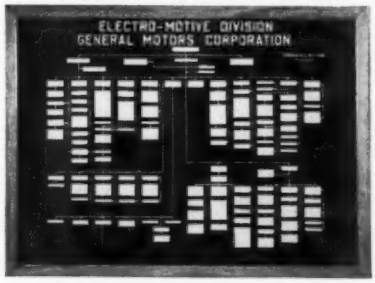

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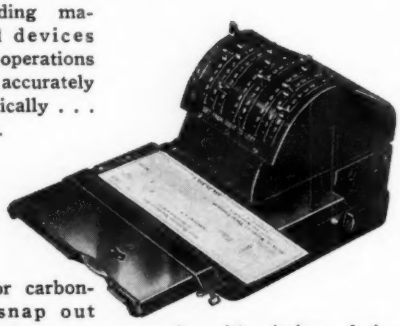

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7	A-7	B-7		D-7
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July 1959 issue
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A

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Agency—Geer, DuBois & Co., Inc.

Acme Visible Records, Inc. 74
Agency—E. H. Brown Adv. Agy.

Ajax Business Machines, Inc. 80
Agency—Frederick S. Oliver Adv.

American Telephone & Telegraph Co. 3
Agency—N. W. Ayer & Son, Inc.

Anken Film Co., Inc. 62
Agency—Industrial Marketing Services Co.

B

Bell Telephone System 3
Agency—N. W. Ayer & Son, Inc.

Brownville Paper Co. 81
Agency—Flack Adv. Agy., Inc.

Burgess-Manning Co., Industrial Silencer Div. 80
Agency—Merchandising Advertisers, Inc.

Burroughs Corp. 8
Agency—Campbell-Ewald Co.

C

Can-Pro Corp. 77
Agency—Geer-Murray, Inc.

Convoy, Inc. 74
Agency—Rex Farrall, Inc.

Cramer Posture Chair Co., Inc. 72, 73
Agency—Allmayer, Fox & Reshkin Agy., Inc.

D

Davidson Corp. 63
Agency—Hazard Adv. Co., Inc.

Dewberry Engraving Co. 77

Dick Co., A. B. 14, 15
Agency—Fuller & Smith & Ross, Inc.

Dresser Products, Inc. 56
Agency—Gaskill-Oertel Adv.

Dri-Stat Div., Peerless Photo Products, Inc. 16
Agency—John Mather Lupton, Inc.

DuPont de Nemours & Co., Inc., E. I., Film Dept.-Mylar 70
Agency—Batten, Barton, Durstine & Osborne, Inc.

E

Eastern Fine Paper & Pulp Div. of Standard Packaging Corp. 20
Agency—Smith, Hagel & Knudsen, Inc.

Eastman Kodak Co., Business Photo Methods Div., Verifax 18, 19
Agency—J. Walter Thompson Co.

Edison Voicewriter Div., Thomas A. Edison Industries 9
Agency—J. Walter Thompson Co.

Electronic Accounting Card Corp. 62
Agency—James R. Fox Adv.

F

Faber-Castell Pencil Co., Inc., A. W. 76
Agency— J. M. Kesslinger & Assoc.

Force & Co., Inc., Wm. A. 78
Agency—Philip I. Ross Co.

G

Globe Wernicke Co., The 75
Agency—Strauchen & McKim Adv.

Graphic Systems 76
Agency—Diener & Dorskind, Inc.

H

Haloid Xerox, Inc. 13
Agency—Hutchins Adv. Co., Inc.

Hammermill Paper Co. 4
Agency—Batten, Barton, Durstine & Osborne, Inc.

Heinz Co., A. P. 77
Agency—Harry Sturgis & Assoc.

J

Johns-Manville Corp. 7
Agency—J. Walter Thompson Co.

K

Kee Lox Mfg. Co. 71
Agency—Hutchins Adv. Co., Inc.

M

Mac Panel Co. 47
Agency—Lavidge & Davis Adv.

Management Control Charts Co. 79
Agency—Stern, Walters & Simmons, Inc.

McGraw Edison Co., Voicewriter Div. 9
Agency—J. Walter Thompson Co.

Minnesota Mining & Mfg. Co., Thermo-Fax. 6
Agency—Erwin, Wasey, Ruthrauff & Ryan, Inc.

Monroe Calculating Machine Co. ..... 2nd Cover
Agency—L. H. Hartman Co., Inc.

N

National Blank Book Co. 57
Agency—Sutherland-Abbott Adv.

National Cash Register Co., The ..... 4th Cover, 67
Agency—McCann-Erickson, Inc.

O

Office Equipment Manufacturers Exhibits Inc. 78
Agency—Schneider-Stogel Co.

Office Management 12, 15, 68

Ozalid Div. of General Aniline & Film Corp. 69
Agency—Benton & Bowles, Inc.

P

Peerless Photo Products, Inc. 16
Agency—John Mather Lupton Co., Inc.

Peerless Steel Equipment Co. 10
Agency—Norman A. Strang Adv.

Photorapid Corp. ..... 3rd Cover
Agency—Wade Adv., Inc.

Pitney-Bowes, Inc. 75
Agency—L. E. McGivena & Co., Inc.

R

Ronald Press Co., The 76

S

Scribe Distributors Co. 11
Agency—Jackson, Haerr, Peterson & Hall, Inc.

Shredmaster Corp., The 68
Agency—Howard A. Harkavy Inc.

Smith, Inc., Charles C. 79
Agency—Ayres, Swanson & Assoc., Inc.

Smith-Corona, Inc. 22
Agency—Cunningham & Walsh, Inc.

Standard Packaging Corp., Eastern Fine Paper & Pulp Div. 20
Agency—Smith, Hagel & Knudsen, Inc.

T

Teletype Corp. 51
Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.

Traveletter Corp. 66
Agency—Platt & O'Donnell, Inc.

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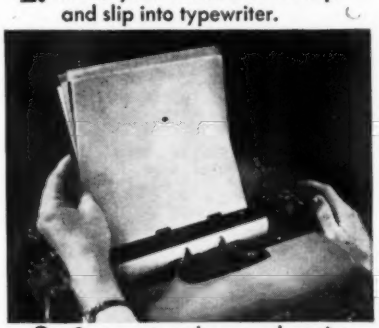

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What price politics?

Editorial

LAST month, for the first time since 1925, a presidential nominee for Cabinet appointment was rejected by the Senate. Only seven times before in the nation's history has there been a similar refusal to accept a Presidential recommendation for membership in the Cabinet.

There are a variety of reasons for this unusual rejection: deep personal antagonism and suspicion between Lewis L. Strauss and many powerful and respected Senators; a wide gulf between the political viewpoints of the Senate liberal majority and the conservative nominee. But listed as a significant factor in every account of the maneuvering and deliberations that finally resulted in the Admiral's rejection was Senatorial resentment of what seemed to many legislators undue business pressure in support of the nominee. The closeness of the final vote makes it at least a reasonable assumption that, had there not been such pressure, or had those supporting Admiral Strauss found more palatable ways of expressing their views, he might have been accepted.

This points up very strongly some of the warnings expressed at the recent AMA conference on the role of businessmen in politics, covered on page 37 of this issue. Practically every speaker at the conference urged greater participation by businessmen in politics—but as individual citizens, not as corporate representatives. At least one speaker pointed out that politics and business are entirely different fields, and that businessmen only hurt themselves and their cause by attempting to take an active political role without learning some of the ground rules and principles of political life. The fact that such a warning was well-timed is emphasized by the widespread Senatorial resentment against the business tactics used in support of Admiral Strauss.

Another warning issued strongly by both business and political leaders at the AMA conference would seem to have been borne out by the recent Senate action in Washington. Once again, corporations are beginning to take an active political role, arriving at company views on various political issues, and then presenting them as the corporate body's political opinions. Whether or not this is "dangerous and perhaps illegal," as was charged by Arnold H. Maremont, chairman of the board, Allied Paper Corp., at the conference, is a moot point. That it is unwise and will eventually hurt the companies that try it hardly seems even debatable. This sort of thing has been tried in the past, when corporations were far more closely held groups than they are today, and it has invariably backfired—either immediately or eventually—on the various candidates and issues the company supported, and on the company as well.

Even the bipartisan approach urged by the AMA speakers, in which company management would encourage greater political participation by employees in the party of their choice, while remaining strictly aloof from any attempt to dictate which party that should be, has its dangers. Most employees will always strongly suspect that their careers are least likely to be compromised if they should find they prefer the same party as the boss. But deliberate formulation of a company political program, backed by the corporation's name, and financed by the stockholders' money, will not only prejudice lawmakers and the public; it will keep some good men and women of conviction away from the company employ altogether, and will inevitably lead many company employees to pay lip service to the company's "platform," while going out of their way to vote the other way at every election.

What price politics for business, rather than businessmen? And can business afford to pay the price?

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